

SEQUENCE LISTING

<110> Reed, Steven G.
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 Sleath, Paul R.
 McNeill, Patricia D.
 Homer, Mary
 Secrist, Heather

<120> COMPOUNDS AND METHODS FOR THE DIAGNOSIS
 AND TREATMENT OF *B. MICROTI* INFECTION

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 Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro
 65 70 75 80
 Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu Arg Phe
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 Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe Asn Glu
 100 105 110
 Val Cys Leu Ser Tyr Ile Tyr Lys His Ser Val Met Ile Leu Glu Arg
 115 120 125
 Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu Glu Lys Thr Lys
 130 135 140
 Glu Lys Asn Lys Leu Lys Glu Leu Glu Lys Cys Phe Pro Glu Gln
 145 150 155 160
 Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe Asp Asn Ala
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 Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp Glu Ile Ser Asn
 180 185 190
 Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe Asp His
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 Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe Ile Tyr
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 Cys Asp Leu Leu Leu Gln His Leu Ile Tyr Lys Phe Tyr Tyr Asp Asn
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<210> 19
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 <212> PRT
 <213> Babesia microti

<400> 19

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 <212> PRT
 <213> Babesia microti

<400> 20

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 50 55 60
 Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
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 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly
 85 90 95
 Trp Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu
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 Asn Glu Val Cys Leu Ser Tyr Ile Tyr Lys His Ser Val Met Ile Leu
 130 135 140
 Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu Glu Lys
 145 150 155 160
 Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe Pro
 165 170 175
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 195 200 205
 Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe
 210 215 220
 Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe
 225 230 235 240
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 Asp Asn Thr Val Asn Asp Ile Lys Lys Asn Phe Asp Glu Ser Lys Ser
 260 265 270
 Lys Ala Leu Val Leu Arg Asp Lys Ile Thr Lys Lys Asp Gly Asp Tyr
 275 280 285
 Asn Thr His Phe Glu Asp Met Ile Lys Glu Leu Asn Ser Ala Ala Glu
 290 295 300
 Glu Phe Asn Lys Ile Val Asp Ile Met Ile Ser Asn Ile Gly Asp Tyr
 305 310 315 320
 Asp Glu Tyr Asp Ser Ile Ala Ser Phe Lys Pro Phe Leu Ser Met Ile
 325 330 335
 Thr Glu Ile Thr Lys Ile Thr Lys Val Ser Asn Val Ile Ile Pro Gly
 340 345 350
 Ile Lys Ala Leu Thr Leu Thr Val Phe Leu Ile Phe Ile Thr Lys
 355 360 365

<210> 21
 <211> 492
 <212> PRT
 <213> Babesia microti

<400> 21
 Met Tyr Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn

1	5	10	15
Ala Lys Leu Pro Thr Asp Asn Val Ile Gly Ile Ser Ile Tyr Thr Cys			
20	25	30	
Glu His Asn Asn Pro Val Leu Ile Glu Phe Tyr Val Ser Lys Lys Gly			
35	40	45	
Ser Ile Cys Tyr Tyr Phe Tyr Ser Met Asn Asn Asp Thr Asn Lys Trp			
50	55	60	
Asn Asn His Lys Ile Lys Tyr Asp Lys Arg Phe Asn Glu His Thr Asp			
65	70	75	80
Met Asn Gly Ile His Tyr Tyr Ile Asp Gly Ser Leu Leu Ala Ser			
85	90	95	
Gly Glu Val Thr Ser Asn Phe Arg Tyr Ile Ser Lys Glu Tyr Glu Tyr			
100	105	110	
Glu His Thr Glu Leu Ala Lys Glu His Cys Lys Lys Glu Lys Cys Val			
115	120	125	
Asn Val Asp Asn Ile Glu Asp Asn Asn Leu Lys Ile Tyr Ala Lys Gln			
130	135	140	
Phe Lys Ser Val Val Thr Thr Pro Ala Asp Val Ala Gly Val Ser Asp			
145	150	155	160
Gly Phe Phe Ile Arg Gly Gln Asn Leu Gly Ala Val Gly Ser Val Asn			
165	170	175	
Glu Gln Pro Asn Thr Val Gly Met Ser Leu Glu Gln Phe Ile Lys Asn			
180	185	190	
Glu Leu Tyr Ser Phe Ser Asn Glu Ile Tyr His Thr Ile Ser Ser Gln			
195	200	205	
Ile Ser Asn Ser Phe Leu Ile Met Met Ser Asp Ala Ile Val Lys His			
210	215	220	
Asp Asn Tyr Ile Leu Lys Glu Gly Glu Gly Cys Glu Gln Ile Tyr			
225	230	235	240
Asn Tyr Glu Glu Phe Ile Glu Lys Leu Arg Gly Ala Arg Ser Glu Gly			
245	250	255	
Asn Asn Met Phe Gln Glu Ala Leu Ile Arg Phe Arg Asn Ala Ser Ser			
260	265	270	
Glu Glu Met Val Asn Ala Ala Ser Tyr Leu Ser Ala Ala Leu Phe Arg			
275	280	285	
Tyr Lys Glu Phe Asp Asp Glu Leu Phe Lys Lys Ala Asn Asp Asn Phe			
290	295	300	
Gly Arg Asp Asp Gly Tyr Asp Phe Asp Tyr Ile Asn Thr Lys Lys Glu			
305	310	315	320
Leu Val Ile Leu Ala Ser Val Leu Asp Gly Leu Asp Leu Ile Met Glu			
325	330	335	
Arg Leu Ile Glu Asn Phe Ser Asp Val Asn Asn Thr Asp Asp Ile Lys			
340	345	350	
Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys			
355	360	365	
Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val			
370	375	380	
Asn Glu Val Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu			
385	390	395	400
Ile Ile Ser Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val			
405	410	415	
Ile Ser Ser Tyr Lys Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly			
420	425	430	
Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly			

435	440	445
Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala		
450	455	460
Thr Ser Thr Leu Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala		
465	470	475
Gly Thr Thr Thr Ser Ser Gly Thr Trp Phe Gly Lys		
485	490	

<210> 22
<211> 138
<212> PRT
<213> Babesia microti

<400> 22		
Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln		
1	5	10
Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu		
20	25	30
Gly Gln Pro Val Pro Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala		
35	40	45
Ser Leu Gly Pro Pro Ala Ser Leu Gly Gln Pro Val Pro Leu Gly Pro		
50	55	60
Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu		
65	70	75
Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala		
85	90	95
Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro		
100	105	110
Thr Val Pro Leu Gly Pro Pro Ala Ser Arg Ser Val Ser Pro Ala Lys		
115	120	125
Thr Ala Pro Leu Ile Lys Lys Ser Val Ile		
130	135	

<210> 23
<211> 303
<212> PRT
<213> Babesia microti

<400> 23		
Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr		
1	5	10
Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Gly Asp Thr Asp		
20	25	30
Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly		
35	40	45
Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu		
50	55	60
Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro		
65	70	75
Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly		
85	90	95
Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu		
100	105	110
Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro		

115	120	125
Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr Ser Arg Arg Ile Val		
130	135	140
Ile Phe Asn Glu Ile Tyr Leu Ser His Ile Tyr Glu His Ser Val Met		
145	150	155
Ile Leu Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu		
165	170	175
Glu Lys Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys		
180	185	190
Phe Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile		
195	200	205
Ile Asp Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp		
210	215	220
Glu Ile Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp		
225	230	235
Asp Phe Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Pro Lys Asn		
245	250	255
Met Phe Leu Tyr Cys Asp Leu Leu Lys His Leu Ile Arg Lys Phe		
260	265	270
Tyr Cys Asp Asn Thr Ile Asn Asp Ile Lys Lys Asn Phe Asp Asp Ile		
275	280	285
Glu Lys Leu Gly Cys Phe Gln Ala Arg Ser Phe Leu Pro Val Asn		
290	295	300

<210> 24
 <211> 592
 <212> PRT
 <213> Babesia microti

<400> 24		
Met Met Lys Phe Asn Ile Asp Lys Ile Ile Leu Ile Asn Leu Ile Val		
1	5	10
Leu Leu Asn Arg Asn Val Val Tyr Cys Val Asp Thr Asn Asn Ser Ser		
20	25	30
Leu Ile Glu Ser Gln Pro Val Thr Thr Asn Ile Asp Thr Asp Asn Thr		
35	40	45
Ile Thr Thr Asn Lys Tyr Thr Gly Thr Ile Ile Asn Ala Asn Ile Val		
50	55	60
Glu Tyr Arg Glu Phe Glu Asp Glu Pro Leu Thr Ile Gly Phe Arg Tyr		
65	70	75
Thr Ile Asp Lys Ser Gln Gln Asn Lys Leu Ser His Pro Asn Lys Ile		
85	90	95
Asp Lys Ile Lys Phe Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn Ala		
100	105	110
Lys Leu Pro Thr Asp Asn Val Ile Cys Ile Ser Ile Tyr Thr Cys Lys		
115	120	125
His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Ser Ile Glu Lys Tyr		
130	135	140
Tyr Tyr His Tyr Phe Tyr Ser Met Asn Asn Asp Thr Asn Lys Trp Asn		
145	150	155
Asn His Lys Leu Lys Tyr Asp Lys Thr Tyr Asn Glu Tyr Thr Asp Asn		
165	170	175
Asn Gly Val Asn Tyr Tyr Lys Ile Tyr Tyr Ser Asp Lys Gln Asn Ser		
180	185	190

Pro Thr Asn Gly Asn Glu Tyr Glu Asp Val Ala Leu Ala Arg Ile His
 195 200 205
 Cys Asn Glu Glu Arg Cys Ala Asn Val Lys Val Asp Lys Ile Lys Tyr
 210 215 220
 Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Gly Thr Ile Ile Asn Ala
 225 230 235 240
 Asn Ile Val Glu Tyr Leu Val Phe Glu Asp Glu Pro Leu Thr Ile Gly
 245 250 255
 Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn Glu Leu Ser His Pro
 260 265 270
 Asn Lys Ile Tyr Lys Ile Lys Phe Ser Asp Tyr Ile Ile Glu Phe Asp
 275 280 285
 Asp Asp Ala Lys Leu Thr Thr Ile Gly Thr Val Glu Asp Ile Thr Ile
 290 295 300
 Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Ser
 305 310 315 320
 Ile Glu Lys Tyr Tyr Tyr Tyr Phe Tyr Ser Met Asn Asn Asn Thr
 325 330 335
 Asn Lys Trp Asn Asn His Asn Leu Lys Tyr Asp Asn Arg Phe Lys Glu
 340 345 350
 His Ser Asp Lys Asn Gly Ile Asn Tyr Tyr Glu Ile Ser Ala Phe Lys
 355 360 365
 Trp Ser Phe Ser Cys Phe Phe Val Asn Lys Tyr Glu His Lys Glu Leu
 370 375 380
 Ala Arg Ile His Cys Asn Glu Glu Arg Cys Ala Asn Val Lys Val Asp
 385 390 395 400
 Lys Ile Lys Tyr Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Gly Thr
 405 410 415
 Ile Ile Asn Ala Asn Ile Val Glu Tyr Leu Val Phe Glu Asp Glu Pro
 420 425 430
 Leu Thr Ile Gly Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn Glu
 435 440 445
 Leu Ser His Pro Asn Lys Ile Tyr Lys Ile Lys Phe Ser Asp Tyr Ile
 450 455 460
 Ile Glu Phe Asp Asp Asp Ala Lys Leu Thr Thr Ile Gly Thr Val Glu
 465 470 475 480
 Asp Ile Thr Ile Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile Arg
 485 490 495
 Phe Ser Cys Ser Ile Glu Lys Tyr Tyr Tyr Phe Tyr Ser Met
 500 505 510
 Asn Asn Asn Thr Asn Lys Trp Asn Asn His Asn Leu Lys Tyr Asp Asn
 515 520 525
 Arg Phe Lys Glu His Ser Asp Lys Asn Gly Ile Asn Tyr Tyr Glu Ile
 530 535 540
 Ser Ala Phe Lys Trp Ser Phe Ser Cys Phe Phe Val Asn Lys Tyr Glu
 545 550 555 560
 His Lys Glu Leu Ala Arg Ile His Cys Asn Glu Glu Lys Cys Val Asn
 565 570 575
 Val Lys Val Asp Asn Ile Gly Asn Lys Asn Leu Glu Ile Tyr Val Lys
 580 585 590

<210> 25

<211> 463

<212> PRT

<213> Babesia microti

<400> 25

Ile	Ile	Met	Lys	Ile	Asn	Ile	Asp	Asn	Ile	Ile	Leu	Ile	Asn	Leu	Ile
1		5							10						15
Ile	Leu	Leu	Asn	Arg	Asn	Val	Val	Tyr	Cys	Val	Asp	Lys	Asn	Asp	Val
	20					25								30	
Ser	Leu	Trp	Lys	Ser	Lys	Pro	Ile	Thr	Thr	Val	Ser	Thr	Thr	Asn	Asp
	35						40					45			
Thr	Ile	Thr	Asn	Lys	Tyr	Thr	Ser	Thr	Val	Ile	Asn	Ala	Asn	Phe	Ala
	50					55					60				
Ser	Tyr	Arg	Glu	Phe	Glu	Asp	Arg	Glu	Pro	Leu	Thr	Ile	Gly	Phe	Glu
	65				70			75					80		
Tyr	Met	Ile	Asp	Lys	Ser	Gln	Gln	Asp	Lys	Leu	Ser	His	Pro	Asn	Lys
		85						90					95		
Ile	Asp	Lys	Ile	Lys	Ile	Ser	Asp	Tyr	Ile	Ile	Glu	Phe	Asp	Asp	Asn
		100						105				110			
Ala	Lys	Leu	Pro	Thr	Gly	Ser	Val	Asn	Asp	Ile	Ser	Ile	Ile	Thr	Cys
		115					120					125			
Lys	His	Asn	Asn	Pro	Val	Leu	Ile	Arg	Phe	Ser	Cys	Leu	Ile	Glu	Gly
	130					135					140				
Ser	Ile	Cys	Tyr	Tyr	Phe	Tyr	Leu	Leu	Asn	Asn	Asp	Thr	Asn	Lys	Trp
	145				150				155					160	
Asn	Asn	His	Lys	Leu	Lys	Tyr	Asp	Lys	Thr	Tyr	Asn	Glu	His	Thr	Asp
		165						170				175			
Asn	Asn	Gly	Ile	Asn	Tyr	Tyr	Lys	Ile	Asp	Tyr	Ser	Glu	Ser	Thr	Glu
		180					185					190			
Pro	Thr	Thr	Glu	Ser	Thr	Thr	Cys	Phe	Cys	Phe	Arg	Lys	Lys	Asn	His
		195					200				205				
Lys	Ser	Glu	Arg	Lys	Glu	Leu	Glu	Asn	Tyr	Lys	Tyr	Glu	Gly	Thr	Glu
	210					215				220					
Leu	Ala	Arg	Ile	His	Cys	Asn	Lys	Gly	Lys	Cys	Val	Lys	Leu	Gly	Asp
	225					230				235			240		
Ile	Lys	Ile	Lys	Asp	Lys	Asn	Leu	Glu	Ile	Tyr	Val	Lys	Gln	Leu	Met
		245					250					255			
Ser	Val	Asn	Thr	Pro	Val	Asn	Phe	Asp	Asn	Pro	Thr	Ser	Ile	Asn	Leu
		260					265					270			
Pro	Thr	Val	Ser	Thr	Thr	Asn	Asp	Thr	Ile	Thr	Asn	Lys	Tyr	Thr	Gly
		275					280					285			
Thr	Ile	Ile	Asn	Ala	Asn	Ile	Val	Glu	Tyr	Cys	Glu	Phe	Glu	Asp	Glu
		290					295				300				
Pro	Leu	Thr	Ile	Gly	Phe	Arg	Tyr	Thr	Ile	Asp	Lys	Ser	Gln	Gln	Asn
	305				310				315				320		
Lys	Leu	Ser	His	Pro	Asn	Lys	Ile	Asp	Lys	Ile	Lys	Phe	Phe	Asp	Tyr
		325					330					335			
Ile	Ile	Glu	Phe	Asp	Asp	Asp	Val	Lys	Leu	Pro	Thr	Ile	Gly	Thr	Val
		340					345					350			
Asn	Ile	Ile	Tyr	Ile	Tyr	Thr	Cys	Glu	His	Asn	Asn	Pro	Val	Leu	Val
		355					360					365			
Glu	Phe	Ile	Val	Ser	Ile	Glu	Glu	Ser	Tyr	Tyr	Phe	Tyr	Phe	Tyr	Ser
	370					375				380					
Met	Asn	Asn	Asn	Thr	Asn	Lys	Trp	Asn	Asn	His	Lys	Leu	Lys	Tyr	Asp
	385					390				395			400		
Lys	Arg	Phe	Lys	Lys	Tyr	Thr	Lys	Asn	Gly	Ile	Asn	Cys	Tyr	Glu	Tyr

405	410	415
Val Leu Arg Lys Cys Ser Ser Tyr Thr Arg Lys Asn Glu Tyr Glu His		
420	425	430
Lys Glu Leu Ala Arg Ile His Cys Asn Glu Glu Lys Cys Val Asn Val		
435	440	445
Lys Val Asp Asn Ile Glu Lys Lys Asn Leu Glu Ile Tyr Val Lys		
450	455	460

<210> 26
 <211> 297
 <212> PRT
 <213> Babesia microti

<400> 26		
Arg Ala Ala Arg Ala Asp Tyr Tyr Lys Tyr Leu Val Asp Glu Tyr Ser		
1	5	10
Ser Pro Arg Glu Glu Arg Glu Leu Ala Arg Val His Cys Asn Glu Glu		
20	25	30
Lys Cys Val Lys Leu Asp Gly Ile Lys Phe Lys Asp Lys Asn Leu Glu		
35	40	45
Ile Tyr Val Lys Gln Leu Met Ser Val Asn Thr Pro Val Val Phe Asp		
50	55	60
Asn Asn Thr Leu Ile Asn Pro Thr Ser Ser Gly Ala Thr Asp Asp		
65	70	75
Ile Thr Tyr Glu Leu Ser Val Glu Ser Gln Pro Val Pro Thr Asn Ile		
85	90	95
Asp Thr Gly Asn Asn Ile Thr Thr Asn Thr Ser Asn Asn Asn Leu Ile		
100	105	110
Lys Ala Lys Phe Leu Tyr Asn Phe Asn Leu Pro Gly Lys Pro Ser Thr		
115	120	125
Gly Leu Phe Glu Tyr Thr Ile Asp Lys Ser Glu Gln Asn Lys Leu Ser		
130	135	140
His Pro Asn Lys Ile Asp Lys Ile Lys Phe Ser Asp Tyr Ile Ile Glu		
145	150	155
Phe Asp Asp Asp Ala Lys Leu Pro Thr Ile Gly Thr Val Asn Ile Ile		
165	170	175
Ser Ile Ile Thr Cys Lys His Asn Asn Pro Val Leu Val Glu Phe Ile		
180	185	190
Val Ser Thr Glu Ile Tyr Cys Tyr Tyr Asn Tyr Phe Tyr Ser Met Asn		
195	200	205
Asn Asn Thr Asn Lys Trp Asn Asn His Lys Leu Lys Tyr Asp Lys Arg		
210	215	220
Tyr Lys Glu Glu Tyr Thr Asp Asp Asn Gly Ile Asn Tyr Tyr Lys Leu		
225	230	235
Asn Asp Ser Glu Pro Thr Glu Ser Thr Glu Ser Thr Thr Cys Phe Cys		
245	250	255
Phe Arg Lys Lys Asn His Lys Tyr Glu Asn Glu Arg Thr Ala Leu Ala		
260	265	270
Lys Glu His Cys Asn Glu Glu Arg Cys Val Lys Val Asp Asn Ile Lys		
275	280	285
Asp Asn Asn Leu Glu Ile Tyr Leu Lys		
290	295	

<210> 27

<211> 121
<212> PRT
<213> Babesia microti

<400> 27

Leu	Trp	Phe	Ile	Lys	Met	Val	Ser	Phe	Lys	Ser	Ile	Leu	Val	Pro	Tyr
1				5					10					15	
Ile	Thr	Leu	Phe	Leu	Met	Ser	Gly	Ala	Val	Phe	Ala	Ser	Asp	Thr	Asp
					20				25				30		
Pro	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly
	35					40				45					
Gly	Pro	Ser	Gly	Thr	Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu
	50					55				60					
Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro
	65					70			75				80		
Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly
					85				90			95			
Trp	Ser	Ser	Glu	Arg	Phe	Gly	Tyr	Gln	Leu	Leu	Pro	Tyr	Ser	Arg	Arg
					100				105			110			
Ile	Val	Thr	Phe	Asn	Glu	Val	Cys	Leu							
					115			120							

<210> 28

<211> 267

<212> PRT

<213> Babesia microti

<400> 28

Leu	Trp	Phe	Ile	Lys	Met	Val	Ser	Phe	Lys	Ser	Ile	Leu	Val	Pro	Tyr
1				5					10					15	
Ile	Thr	Leu	Phe	Leu	Met	Ser	Gly	Ala	Val	Phe	Ala	Ser	Asp	Thr	Asp
					20				25			30			
Pro	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly	Pro	Ser	Glu	Ala	Gly
	35					40				45					
Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu
	50					55				60					
Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	Trp	Pro
	65					70			75			80			
Ser	Glu	Ala	Gly	Trp	Ser	Ser	Glu	Arg	Phe	Gly	Tyr	Gln	Leu	Leu	Pro
					85			90			95				
Tyr	Ser	Arg	Arg	Ile	Val	Thr	Phe	Asn	Glu	Val	Cys	Leu	Ser	Tyr	Ile
					100				105			110			
Tyr	Lys	His	Ser	Val	Met	Ile	Leu	Glu	Arg	Asp	Arg	Val	Asn	Asp	Gly
						115			120			125			
His	Lys	Asp	Tyr	Ile	Glu	Glu	Lys	Thr	Lys	Glu	Lys	Asn	Lys	Leu	Lys
	130					135				140					
Lys	Glu	Leu	Glu	Lys	Cys	Phe	Pro	Glu	Gln	Tyr	Ser	Leu	Met	Lys	Lys
	145					150				155			160		
Glu	Glu	Leu	Ala	Arg	Ile	Phe	Asp	Asn	Ala	Ser	Thr	Ile	Ser	Ser	Lys
					165				170			175			
Tyr	Lys	Leu	Leu	Val	Asp	Glu	Ile	Ser	Asn	Lys	Ala	Tyr	Gly	Thr	Leu
					180				185			190			
Glu	Gly	Pro	Ala	Ala	Asp	Asn	Phe	Asp	His	Phe	Arg	Asn	Ile	Trp	Lys
					195			200			205				

Babesia microti protein sequence alignment

Ser Ile Val Leu Lys Asp Met Phe Ile Tyr Cys Asp Leu Leu Leu Gln
 210 215 220
 His Leu Ile Tyr Lys Phe Tyr Tyr Asp Asn Thr Ile Asn Asp Ile Lys
 225 230 235 240
 Lys Asn Phe Asp Glu Ser Lys Ser Lys Ala Leu Val Leu Arg Asp Lys
 245 250 255
 Ile Thr Lys Lys Asp Val Tyr Val Asn Asp His
 260 265

<210> 29
 <211> 16
 <212> PRT
 <213> Babesia microti

<400> 29
 Ala Trp Thr Phe Ser Val Leu Glu Leu Gln Glu Phe Ser Tyr Thr Val
 1 5 10 15

<210> 30
 <211> 465
 <212> PRT
 <213> Babesia microti

<400> 30
 Met Leu Thr Phe Gly Asn Ile Arg Phe His Asn Ile Asn Leu Pro Pro
 1 5 10 15
 Phe Ser Leu Gly Ile Ile His Ser Ile Thr Val Glu Lys Ala Ile Asn
 20 25 30
 Ser Glu Asp Phe Asp Gly Ile Gln Thr Leu Leu Gln Val Ser Ile Ile
 35 40 45
 Ala Ser Tyr Gly Pro Ser Gly Asp Tyr Ser Ser Phe Val Phe Thr Pro
 50 55 60
 Val Val Thr Ala Asp Thr Asn Val Phe Tyr Lys Leu Glu Thr Asp Phe
 65 70 75 80
 Lys Leu Asp Val Asp Val Ile Thr Lys Thr Ser Leu Glu Leu Pro Thr
 85 90 95
 Ser Val Pro Gly Phe His Tyr Thr Glu Thr Ile Tyr Gln Gly Thr Glu
 100 105 110
 Leu Ser Lys Phe Ser Lys Pro Gln Cys Lys Leu Asn Asp Pro Pro Ile
 115 120 125
 Thr Thr Gly Ser Gly Leu Gln Ile Ile His Asp Gly Leu Asn Asn Ser
 130 135 140
 Thr Ile Ile Thr Asn Lys Glu Val Asn Val Asp Gly Thr Asp Leu Val
 145 150 155 160
 Phe Phe Glu Leu Leu Pro Pro Ser Asp Gly Ile Pro Thr Leu Arg Ser
 165 170 175
 Lys Leu Phe Pro Val Leu Lys Ser Ile Pro Met Ile Ser Thr Gly Val
 180 185 190
 Asn Glu Leu Leu Leu Glu Val Leu Glu Asn Pro Ser Phe Pro Ser Ala
 195 200 205
 Ile Ser Asn Tyr Thr Gly Leu Thr Gly Arg Leu Asn Lys Leu Leu Thr
 210 215 220
 Val Leu Asp Gly Ile Val Asp Ser Ala Ile Ser Val Lys Thr Thr Glu
 225 230 235 240

<210> 31
<211> 128
<212> PRT
<213> Babesia microti

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<400> 31
rp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr
      5           10          15
hr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Ser Asp Thr Asp
      20          25          30
lu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Val
      35          40          45
ro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly
      50          55          60
ly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
      70          75          80
lu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly
      85          90          95
ro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu
     100         105         110
he Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe
     115         120         125

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<210> 32
<211> 245
<212> PRT
<213> Babesia microti

<400> 32

Gln	Glu	Cys	Cys	Leu	Val	Val	Lys	Asp	Lys	Val	Ile	Arg	His	Ala	Ala
1				5			10							15	
Phe	Ala	Ala	Thr	Ile	Ile	Ile	Arg	Arg	Arg	Arg	Val	Ser	Phe	Ile	Ile
				20			25							30	
Leu	Gly	Leu	Ile	Ile	Ala	Thr	Met	Thr	Pro	Phe	Phe	Thr	Lys	Val	Phe
				35			40						45		
Phe	Phe	Gln	Arg	Cys	Leu	Ser	Ile	Met	Arg	Phe	Tyr	Ser	Ser	Leu	Pro
				50			55					60			
Thr	Phe	Ile	Leu	Ile	Glu	Ile	Ala	Met	Leu	Phe	Phe	Met	Ser	Val	Thr
				65			70				75		80		
Cys	Phe	Leu	Arg	Cys	Leu	Ser	Ile	Ile	Arg	Phe	Tyr	Ser	Ser	Ile	Ser
				85			90					95			
Thr	Phe	Ile	Leu	Ile	Asp	Phe	Val	Met	Pro	Phe	Phe	Thr	Leu	Phe	Thr
				100			105					110			
Tyr	Phe	Leu	Arg	Cys	Leu	Ser	Ile	Met	Arg	Phe	Ser	Phe	Ser	Leu	Leu
				115			120					125			
Thr	Phe	Ile	Arg	Ile	Asp	Phe	Val	Met	Pro	Phe	Phe	Met	Ser	Val	Thr
				130			135				140				
Cys	Phe	Leu	Arg	Cys	Leu	Ser	Ile	Ile	Arg	Phe	Tyr	Ser	Ser	Ile	Ser
				145			150				155		160		
Thr	Phe	Ile	Leu	Ile	Asp	Phe	Val	Met	Pro	Phe	Phe	Thr	Leu	Phe	Thr
				165			170				175				
Tyr	Phe	Leu	Arg	Cys	Leu	Ser	Ile	Ile	Arg	Phe	Tyr	Ser	Ser	Ile	Ser
				180			185					190			
Thr	Phe	Ile	Leu	Ile	Asp	Phe	Val	Met	Pro	Phe	Phe	Thr	Leu	Phe	Thr
				195			200				205				
Tyr	Phe	Leu	Arg	Cys	Leu	Ser	Ile	Met	Arg	Phe	Ser	Phe	Ser	Leu	Leu
				210			215				220				
Thr	Phe	Ile	Arg	Ile	Gly	Phe	Ala	Met	Pro	Phe	Phe	Thr	Leu	Phe	Ile
				225			230				235		240		
Tyr	Phe	Leu	Cys	Arg											
				245											

<210> 33
<211> 293
<212> PRT
<213> Babesia microti

<400> 33

Thr	Ala	Phe	Ala	Ala	Phe	Leu	Ala	Phe	Gly	Asn	Ile	Ser	Pro	Val	Leu
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Ser	Ala	Gly	Gly	Ser	Gly	Gly	Asn	Gly	Gly	Asn	Gly	Gly	Gly	His	Gln
				20			25					30			
Glu	Gln	Asn	Asn	Ala	Asn	Asp	Ser	Ser	Asn	Pro	Thr	Gly	Ala	Gly	Gly
				35			40					45			
Gln	Pro	Asn	Asn	Glu	Ser	Lys	Lys	Lys	Ala	Val	Lys	Leu	Asp	Leu	Asp
				50			55				60				
Leu	Met	Lys	Glu	Thr	Lys	Asn	Val	Cys	Thr	Thr	Val	Asn	Thr	Lys	Leu

65	70	75	80
Val Gly Lys Ala Lys Ser Lys Leu Asn Lys Leu Glu Gly Glu Ser His			
85	90		95
Lys Glu Tyr Val Ala Glu Lys Thr Lys Glu Ile Asp Glu Lys Asn Lys			
100	105		110
Lys Phe Asn Glu Asn Leu Val Lys Ile Glu Lys Lys Lys Lys Ile Lys			
115	120		125
Val Pro Ala Asp Thr Gly Ala Glu Val Asp Ala Val Asp Asp Gly Val			
130	135		140
Ala Gly Ala Leu Ser Asp Leu Ser Ser Asp Ile Ser Ala Ile Lys Thr			
145	150		160
Leu Thr Asp Asp Val Ser Glu Lys Val Ser Glu Asn Leu Lys Asp Asp			
165	170		175
Glu Ala Ser Ala Thr Glu His Thr Asp Ile Lys Glu Lys Ala Thr Leu			
180	185		190
Leu Gln Glu Ser Cys Asn Gly Ile Gly Thr Ile Leu Asp Lys Leu Ala			
195	200		205
Glu Tyr Leu Asn Asn Asp Thr Thr Gln Asn Ile Lys Lys Glu Phe Asp			
210	215		220
Glu Arg Lys Lys Asn Leu Thr Ser Leu Lys Thr Lys Val Glu Asn Lys			
225	230		240
Asp Glu Asp Tyr Val Asp Val Thr Met Thr Ser Lys Thr Asp Leu Ile			
245	250		255
Ile His Cys Leu Thr Cys Thr Asn Asp Ala His Gly Leu Phe Asp Phe			
260	265		270
Glu Ser Lys Ser Leu Ile Lys Gln Thr Phe Lys Leu Arg Ser Lys Asp			
275	280		285
Glu Gly Glu Leu Cys			
290			

<210> 34
<211> 431
<212> PRT
<213> Babesia microti

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<400> 34
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      20          25          30
sn Phe Thr Leu Asp Asn Pro Ser Ala Tyr Glu Ile Leu Arg Val
      35          40          45
yr Asn Ser Asn Glu Phe Gln Val Gln Ser Pro Gln Asn Ile Asn
      55          60
lu Met Glu Ser Ser Thr Pro Glu Ser Asn Ile Ile Trp Val Val
      70          75          80
er Asp Val Ile Met Lys Arg Phe Asn Cys Lys Asn Arg Lys Ser
      85          90          95
er Thr His Ser Leu Thr Glu Asn Asp Ile Leu Lys Phe Gly Arg
      100         105         110
lu Leu Ser Val Lys Cys Ile Ile Met Gly Ala Gly Ile Thr Ala
      115         120         125
sp Leu Asn Leu Lys Gly Leu Gly Phe Ile Ser Pro Asp Lys Gln
      30          135         140

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Ser Thr Asn Val Cys Asn Tyr Phe Glu Asp Met His Glu Ser Tyr His
 145 150 155 160
 Ile Leu Asp Thr Gln Arg Ala Ser Asp Cys Val Ser Asp Asp Gly Ala
 165 170 175
 Asp Ile Asp Ile Ser Asn Phe Asp Met Val Gln Asp Gly Asn Ile Asn
 180 185 190
 Ser Val Asp Ala Asp Ser Glu Thr Cys Met Ala Asn Ser Gly Val Thr
 195 200 205
 Val Asn Asn Thr Glu Asn Val Ser Asn Ser Glu Asn Phe Gly Lys Leu
 210 215 220
 Lys Ser Leu Val Ser Thr Thr Pro Leu Cys Arg Ile Cys Leu Cys
 225 230 235 240
 Gly Glu Ser Asp Pro Gly Pro Leu Val Thr Pro Cys Asn Cys Lys Gly
 245 250 255
 Ser Leu Asn Tyr Val His Leu Glu Cys Leu Arg Thr Trp Ile Lys Gly
 260 265 270
 Arg Leu Ser Ile Val Lys Asp Asp Asp Ala Ser Phe Phe Trp Lys Glu
 275 280 285
 Leu Ser Cys Glu Leu Cys Gly Lys Pro Tyr Pro Ser Val Leu Gln Val
 290 295 300
 Asp Asp Thr Glu Thr Asn Leu Met Asp Ile Lys Lys Pro Asp Ala Pro
 305 310 315 320
 Tyr Val Val Leu Glu Met Arg Ser Asn Ser Gly Asp Gly Cys Phe Val
 325 330 335
 Val Ser Val Ala Lys Asn Lys Ala Ile Ile Gly Arg Gly His Glu Ser
 340 345 350
 Asp Val Arg Leu Ser Asp Ile Ser Val Ser Arg Met His Ala Ser Leu
 355 360 365
 Glu Leu Asp Gly Gly Lys Val Val Ile His Asp Gln Gln Ser Lys Phe
 370 375 380
 Gly Thr Leu Val Arg Ala Lys Ala Pro Phe Ser Met Pro Ile Lys Gly
 385 390 395 400
 Pro Ile Cys Leu Gln Val Ser Ile Phe Phe Leu Asn Leu Lys Ile Ser
 405 410 415
 Thr His Ser Leu Thr Met Glu Arg Gly Met Glu His Val Leu Leu
 420 425 430

<210> 35
 <211> 6
 <212> PRT
 <213> Babesia microti

<220>
 <221> VARIANT
 <222> (1)...(1)
 <223> Xaa = Glutamic Acid or Glycine

<221> VARIANT
 <222> (2)...(2)
 <223> Xaa = Alanine or Threonine

<221> VARIANT
 <222> (3)...(3)
 <223> Xaa = Glycine or Valine

<221> VARIANT
<222> (4)...(4)
<223> Xaa = Tryptophan or Glycine

<221> VARIANT
<222> (5)...(5)
<223> Xaa = Proline or Serine

<400> 35
Xaa Xaa Xaa Xaa Xaa Ser
1 5

<210> 36
<211> 32
<212> PRT
<213> Babesia microti

<220>
<221> VARIANT
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<223> Xaa = Methionine or Isoleucine

<221> VARIANT
<222> (9)...(9)
<223> Xaa = Tyrosine or Serine

<221> VARIANT
<222> (10)...(10)
<223> Xaa = Serine or Phenylalanine

<221> VARIANT
<222> (12)...(12)
<223> Xaa = Leucine or Isoleucine

<221> VARIANT
<222> (13)...(13)
<223> Xaa = Proline, Serine or Leucine

<221> VARIANT
<222> (17)...(17)
<223> Xaa = Leucine or Arginine

<221> VARIANT
<222> (19)...(19)
<223> Xaa = Glutamic Acid, Aspartic Acid or Glycine

<221> VARIANT
<222> (20)...(20)
<223> Xaa = Isoleucine or Phenylalanine

<221> VARIANT
<222> (21)...(21)
<223> Xaa = Alanine or Valine

<221> VARIANT
 <222> (23)...(23)
 <223> Xaa = Leucine or Proline

<221> VARIANT
 <222> (26)...(26)
 <223> Xaa = Methionine or Threonine

<221> VARIANT
 <222> (27)...(27)
 <223> Xaa = Serine or Leucine

<221> VARIANT
 <222> (28)...(28)
 <223> Xaa = Valine or Phenylalanine

<221> VARIANT
 <222> (29)...(29)
 <223> Xaa = Threonine or Isoleucine

<221> VARIANT
 <222> (30)...(30)
 <223> Xaa = Cysteine or Tyrosine

<400> 36

Arg	Cys	Leu	Ser	Ile	Xaa	Arg	Phe	Xaa	Xaa	Ser	Xaa	Xaa	Thr	Phe	Ile
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Xaa	Ile	Xaa	Xaa	Xaa	Met	Xaa	Phe	Phe	Xaa	Xaa	Xaa	Xaa	Phe	Leu	
				20					25				30		

<210> 37

<211> 1820

<212> DNA

<213> Babesia microti

<400> 37

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taatttaaag	aacagacatc	tggccattca	tgctaagagg	tctcttcatt	gttgagtggg	180
aacagccttg	tatacgggct	tacaacacaa	tgaaaaaaca	ccttgtagaa	gagatcatgc	240
ttcactcagt	gctagatgtt	gatgccagtg	atttgcttgg	ggtagtaagc	cagtactaga	300
atacaggatg	cacttggact	ggccaaacaga	atacacctgt	tgccctgaata	gaaactcaca	360
gagaccgcgt	gctgtctgg	accaacaagg	ttctgtttct	gggaagaatt	tacagatatt	420
atgttgggaa	aagagacacc	ctgtatgtgt	agaaacaaag	aagcacagat	cttagatgaa	480
ttaatataag	aatgatactt	ctctagaaac	aaatgttagtt	accaactata	ttccagaacc	540
caatgcggat	tcagaatctg	tacatgttga	aatccaggaa	catgataaaca	tcaatccaca	600
agacgcttgc	gatagtgagc	cgctcgaaca	aatggattct	gataccaggg	tgttgcccga	660
aagtttggat	gagggggtac	cacaccaatt	ctctagatta	gggcaccact	cagacatggc	720
atctgatata	aatgtatgaag	aaccatcatt	taaaatcggc	gagaatgaca	taattcaacc	780
accctgggaa	gatacagctc	cataccatc	aatagatgtat	gaagagcttgc	acaacttaat	840
gagactaacg	gatcgtacgt	caatgttgc	aatgtatgtat	ggaaatggca	aactcaatac	900
gaataaaaagt	gatcgtacgt	caatgttgc	aatgtatgtat	cagacacccgc	aagaaaatata	960
tgaagagctt	gatcgtacgt	caatgttgc	aatgtatgtat	atatatgttgc	agcgtaaaga	1020

aggcatggc aaaccaata cgaataaaag tgagaaggct gaaagaaaat cgcatgatac	1080
tcagacaacg caagaaatat gtgaagagtg tgaagaaggg catgacaaaa tcaataagaa	1140
taaaagtggaa aatgctggaa taaaatcgta tgatactcg acaacgcacaaatgtga	1200
agagtgtgaa gaagggcatg acaaaaatcaa taagaataaa agtggaaatg ctggataaaa	1260
atcgatgat actcagacac cgcaggaaac aagtgcgc tcatgaagaag ggcacatgacaa	1320
aatcaatacg aataaaatgt agaaggctga aagaaaatcg catgataactc agacaacgcacaa	1380
agaaaatgtgta gaagagtgtg aagaaggca tgacaaaatc aataagaata aaagtggaaa	1440
tgctggataaaatcgatgat atactcgac accgcaggaa acaagtgcgc ctcatgaaga	1500
agagcatggc aatctcaata agaataaaaag tggaaaggct ggaataaaaat cgacataatac	1560
ttagacacccctgaaaaaa aagacttttg taaagaaggg tgcatgggt gcaataataa	1620
gcccgaggat aatgaaagag acccgctcgc tgcgtatgat gatgggtggct gcgaatgcgg	1680
catgacgaat cacttgtct ttgactacaa gacaacactc ttgttaaaga gcctcaagac	1740
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<210> 38

<211> 445

<212> PRT

<213> Babesia microti

<400> 38

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20 25 30	
His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser Glu Pro Leu Glu	
35 40 45	
Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly	
50 55 60	
Val Pro His Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser	
65 70 75 80	
Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile	
85 90 95	
Ile Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp	
100 105 110	
Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp	
115 120 125	
Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys	
130 135 140	
Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu	
145 150 155 160	
Glu Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu	
165 170 175	
Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala	
180 185 190	
Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu	
195 200 205	
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala	
210 215 220	
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu	
225 230 235 240	
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala	
245 250 255	
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala	

260	265	270
His Glu Glu Gly His Asp Lys Ile Asn Thr Asn Lys Ser Glu Lys Ala		
275	280	285
Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu		
290	295	300
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala		
305	310	315
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala		
325	330	335
His Glu Glu Glu His Gly Asn Leu Asn Lys Asn Lys Ser Gly Lys Ala		
340	345	350
Gly Ile Lys Ser His Asn Thr Gln Thr Pro Leu Lys Lys Lys Asp Phe		
355	360	365
Cys Lys Glu Gly Cys His Gly Cys Asn Asn Lys Pro Glu Asp Asn Glu		
370	375	380
Arg Asp Pro Ser Ser Pro Asp Asp Asp Gly Gly Cys Glu Cys Gly Met		
385	390	395
Thr Asn His Phe Val Phe Asp Tyr Lys Thr Thr Leu Leu Leu Lys Ser		
405	410	415
Leu Lys Thr Glu Thr Ser Thr His Tyr Tyr Ile Ala Met Ala Ala Ile		
420	425	430
Phe Thr Ile Ser Leu Phe Pro Cys Met Phe Lys Ala Phe		
435	440	445

<210> 39

<211> 32

<212> PRT

<213> Babesia microti

<220>

<221> VARIANT

<222> (3)...(3)

<223> Xaa = Glycine or Aspartic Acid

<221> VARIANT

<222> (5)...(5)

<223> Xaa = Proline or Isoleucine

<221> VARIANT

<222> (7)...(7)

<223> Xaa = Lysine or Threonine

<221> VARIANT

<222> (11)...(11)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT

<222> (12)...(12)

<223> Xaa = Lysine or Asparagine

<221> VARIANT

<222> (14)...(14)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT
 <222> (15)...(15)
 <223> Xaa = Isoleucine or Arginine

<221> VARIANT
 <222> (18)...(18)
 <223> Xaa = Histidine or Tyrosine

<221> VARIANT
 <222> (23)...(23)
 <223> Xaa = Threonine or Proline

<221> VARIANT
 <222> (26)...(26)
 <223> Xaa = Isoleucine or Threonine

<221> VARIANT
 <222> (27)...(27)
 <223> Xaa = Cysteine or Serine

<221> VARIANT
 <222> (28)...(28)
 <223> Xaa = Aspartic Acid or Glutamic Acid

<221> VARIANT
 <222> (29)...(29)
 <223> Xaa = Glutamic Acid or Alanine

<221> VARIANT
 <222> (30)...(30)
 <223> Xaa = Cysteine or Histidine

<400> 39

Gly	His	Xaa	Lys	Xaa	Asn	Xaa	Asn	Lys	Ser	Xaa	Xaa	Ala	Xaa	Xaa	Lys
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Ser	Xaa	Asp	Thr	Gln	Thr	Xaa	Gln	Glu	Xaa	Xaa	Xaa	Xaa	Xaa	Glu	Glu
			20					25					30		

<210> 40
 <211> 2430
 <212> DNA
 <213> Babesia microti

<400> 40

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ttggccactt	taattataag	gatagggaac	ctttaacaat	agtatttgta	tacatgatcg	180
atgaatcaga	acaaaataaa	ttatcacatc	cgaataaaaat	tgataaaaatc	aaaatttctg	240
attatataat	tgaatttgat	gacaatgcata	aattaccaac	tggtagtgtt	attgatttaa	300
acatctatac	ttgcaaacat	aataatccag	tattaattga	attttatgtt	tctatagaag	360
gatcttcgt	ctattatttc	tctcattgaa	taatgataca	aatgaatgga	ataatcacaa	420
aataaaaatat	gataaaaaat	ataaagaata	tacgacatg	aatggtattc	attattatta	480
tattgatgtt	agtttacttg	taagtggcga	agttacatct	aattttcggt	atatttctaa	540
agaatatgaa	tatgagcata	caggattag	aaaaaaatat	tgtaatgaag	aaagatgtgt	600

aaaattggat aacattaaga taaaggataa taatttgaa atttatgtga aataattaa	660
tgaagtataa tatttttat aataattcaa agattaatat aatcaattat tataattaca	720
aaaataatta attttagaat attatattat taatcaattc agattataaa tacatatttt	780
tacatacatt tcaatttaaa cattcaaatt aatgtcattt ttatctacat tattataatt	840
ataactataa tattcattaa atactattaa aaaaaatatc ctctacatta tattaattat	900
tatagtatgt cattatataa catattcaca acgtataaca aatcaatcat taacatatac	960
atatatgata tcattaataa tcaatattta attgatacaa taatcaatag tcattgtaa	1020
tataatcatt gtatactaatttattataaa ttattacaaa atacactttt tacttcatt	1080
ttatctgt taaatttcat attctaataat tatattcattttctcatgt tactttaatc	1140
tatccata ttatccaa tttcttcatt taagactgag atgttcgttc gttcatacat	1200
aaataatgtg taaattttgt aatatataat aatgtataca tctggattt catctatttt	1260
gtaataaaata taaaaaaaaac ggtaaagtt agtgcctta ttccaggaat tattacatta	1320
gaaacttgg tgattttagt gatbtcgtg atcattgaaa gaaatggttt gaaacttgca	1380
atactgtcat actcatcata atccccatg ttggaaatca tgatgtcaac aatttttata	1440
aattcttcgt ctgcacttta caactcctta atcatgtcct caaaatgagt gttataatct	1500
ccatcccttt tagtgatctt atccctcaaa actaaagctt tagatttggat tcgtcaaaa	1560
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actatttttc tatttttttttga tatttttttttga tatttttttttga tatttttttttga	2040
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ccactaggcc tatttttttttga tatttttttttga tatttttttttga tatttttttttga	2280
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<210> 41
<211> 128
<212> PRT
<213> Babesia microti

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<400> 41
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      20          25          30
Asn Val Ile Asn Ala Asn Leu Ile Gly His Phe Asn Tyr Lys Asp Arg
      35          40          45
Glu Pro Leu Thr Ile Val Phe Val Tyr Met Ile Asp Glu Ser Glu Gln
      50          55          60
Asn Lys Leu Ser His Pro Asn Lys Ile Asp Lys Ile Lys Ile Ser Asp
      65          70          75          80
Tyr Ile Ile Glu Phe Asp Asp Asn Ala Lys Leu Pro Thr Gly Ser Val
      85          90          95
Ile Asp Leu Asn Ile Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile
      100         105         110
Glu Phe Tyr Val Ser Ile Glu Gly Ser Phe Cys Tyr Tyr Phe Ser His
      115         120         125

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<210> 42
<211> 1271
<212> DNA
<213> Babesia microti

<400> 42

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acgcgttaagg ctatgggtc tatcgccac gettccaaac tacgaagacg tggcttagatt
tctcaactgtt aatctagacc gagggctttt ctactttggc agccacttta ggcctgtgcc
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gaagcaatta tcagaaaattt tataactgt tattagctt ttagcttatt agttagggatg
tatgcacatt gatgacaact agatgcagca ccacaatcac taccacgtac caatcatata
ccaataatgt actaataatg taccoataac tatggttat aaagatggtg tcatttaat
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gtgaagctgg tggcctagt ggaactgggtt ggcctagtga agctgggtgg cctagtgaag
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<210> 43

<211> 166

<212> PRT

<213> Babesia microti

<400> 43

lys Thr His

Arg Lys Thr Gly Asn Glu

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Thr	Arg	Lys	Thr	Gly	Asn	Glu	Pro	Leu	Leu	Glu	Arg	Leu	Arg	Leu	Val
					20				25				30		
Ile	Ile	Asp	Glu	Ile	His	Leu	Leu	His	Asp	Thr	Arg	Gly	Pro	Val	Leu
						35			40			45			
Glu	Ala	Ile	Val	Ala	Arg	Leu	Ser	Gln	Arg	Pro	Glu	Arg	Val	Arg	Leu
						50			55			60			
Val	Gly	Leu	Ser	Ala	Thr	Leu	Pro	Asn	Tyr	Glu	Asp	Val	Ala	Arg	Phe
						65			70			75			80
Leu	Thr	Val	Asn	Leu	Asp	Arg	Gly	Leu	Phe	Tyr	Phe	Gly	Ser	His	Phe
						85				90			95		
Arg	Pro	Val	Pro	Leu	Glu	Gln	Val	Tyr	Tyr	Gly	Val	Lys	Glu	Lys	Lys
						100			105				110		
Ala	Ile	Lys	Arg	Phe	Asn	Ala	Ile	Asn	Glu	Ile	Leu	Tyr	Gln	Glu	Val
						115			120			125			
Ile	Asn	Asp	Val	Ser	Ser	Cys	Gln	Ile	Leu	Val	Phe	Val	His	Ser	Arg
						130			135			140			

Lys Glu Thr Tyr Arg Thr Ala Lys Phe Ile Lys Asp Thr Ala Leu Ser
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<210> 44
 <211> 154
 <212> PRT
 <213> Babesia microti

<400> 44
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 Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly
 35 40 45
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
 65 70 75 80
 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly
 85 90 95
 Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 100 105 110
 Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro
 115 120 125
 Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly
 130 135 140
 Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu
 145 150

<210> 45
 <211> 4223
 <212> DNA
 <213> Babesia microti

<400> 45
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<210> 46

<211> 294

<212> PRT

<213> Babesia microti

<400> 46

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 35 40 45
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
 65 70 75 80
 Ser Glu Ala Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly
 85 90 95
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 100 105 110
 Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro
 115 120 125
 Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly
 130 135 140
 Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr Ser Arg Arg
 145 150 155 160
 Ile Val Ile Phe Asn Glu Ile Tyr Leu Ser His Ile Tyr Glu His Ser
 165 170 175
 Val Met Ile Leu Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr
 180 185 190
 Ile Glu Glu Lys Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu
 195 200 205
 Lys Cys Phe Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala
 210 215 220
 Arg Ile Ile Asp Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu
 225 230 235 240
 Val Asp Glu Ile Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala
 245 250 255
 Ala Asp Asp Phe Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Pro
 260 265 270
 Lys Asn Asn Phe Leu Tyr Cys Asp Leu Leu Leu Lys His Leu Ile Arg
 275 280 285
 Leu Thr Pro Arg Lys Ser
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<210> 47

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide of repeat region of antigen

BMNI-3 (SEQ ID NO:3)

<400> 47

Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly
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Trp	Thr	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Trp	Ser		
							20				25			30	

<210> 48

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide of repeat region of antigen
BMNI-3 (SEQ ID NO:3)

<400> 48

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Pro	Ser	Glu	Ala	Gly	Trp	Gly	Ser	Glu	Ala	Gly	Trp	Ser	Ser		
								20			25			30	

<210> 49

<211> 367

<212> PRT

<213> Babesia microti

<400> 49

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								20			25			30	
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly	Pro	Ser	Glu	Ala
								35			40			45	
Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser
								50			55			60	
Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly
65								70			75			80	
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	Ser	Glu	Ala	Gly	Gly
								85			90			95	
Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Trp	Ser	Ser	Glu
								100			105			110	
Arg	Phe	Gly	Tyr	Gln	Leu	Leu	Pro	Tyr	Ser	Arg	Arg	Ile	Val	Ile	Phe
								115			120			125	
Asn	Glu	Val	Cys	Leu	Ser	Tyr	Ile	Tyr	Lys	His	Ser	Val	Met	Ile	Leu
								130			135			140	
Glu	Arg	Asp	Arg	Val	Asn	Asp	Gly	His	Lys	Asp	Tyr	Ile	Glu	Glu	Lys
145								145			150			155	
Thr	Lys	Glu	Lys	Asn	Lys	Leu	Lys	Glu	Leu	Glu	Lys	Cys	Phe	Pro	
								165			170			175	
Glu	Gln	Tyr	Ser	Leu	Met	Lys	Lys	Glu	Glu	Leu	Ala	Arg	Ile	Phe	Asp
								180			185			190	
Asn	Ala	Ser	Thr	Ile	Ser	Ser	Lys	Tyr	Lys	Leu	Leu	Val	Asp	Glu	Ile

195	200	205
Ser Asn Lys Ala Tyr Gly Thr	Leu Glu Gly Pro	Ala Ala Asn Phe
210	215	220
Asp His Phe Arg Asn Ile Trp	Lys Ser Ile Val	Leu Lys Asp Met Phe
225	230	235
Ile Tyr Cys Asp Leu Leu Gln His	Leu Ile Tyr Lys Phe	Tyr Tyr
245	250	255
Asp Asn Thr Val Asn Asp Ile Lys	Lys Asn Phe Asp	Glu Ser Lys Ser
260	265	270
Lys Ala Leu Val Leu Arg Asp	Lys Ile Thr Lys	Lys Asp Gly Asp Tyr
275	280	285
Asn Thr His Phe Glu Asp Met	Ile Lys Glu Leu	Asn Ser Ala Ala Glu
290	295	300
Glu Phe Asn Lys Ile Val Asp	Ile Met Ile Ser	Asn Ile Gly Asp Tyr
305	310	315
Asp Glu Tyr Asp Ser Ile Ala Ser	Phe Lys Pro	Phe Leu Ser Met Ile
325	330	335
Thr Glu Ile Thr Lys Ile Thr	Lys Val Ser	Asn Val Ile Ile Pro Gly
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Ile Lys Ala Leu Thr Leu Thr	Val Phe Leu Ile	Phe Ile Thr Lys
355	360	365

<210> 50

<211> 1908

<212> DNA

<213> Babesia microti

<400> 50

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attggaggata ataatttgaa aatatatgcg aaacagttta	aatctgttgt tactactcca	240
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agaagtggagg ggaataatat gtttcaggaa gctctgataa	ggttttagaa tgcttagtagt	600
gaagaaatgg ttaatgctgc aagttatcta tccggccccc	ttttcagata taaggaattt	660
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tgtatgtaca	tgttagggtt	gattgttata	cattgtgaat	atattatata	attgtatatt	1860
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<210> 51
<211> 1460
<212> DNA
<213> Babesia microti

<400> 51

<210> 52
<211> 503
<212> PRT
<213> Babesia microti

<400> 52

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Tyr Ile Ser Lys Glu Tyr Glu Tyr Glu His Thr Glu Leu Ala Lys Glu
      35         40         45
His Cys Lys Lys Glu Lys Cys Val Asn Val Asp Asn Ile Glu Asp Asn
      50         55         60
Asn Leu Lys Ile Tyr Ala Lys Gln Phe Lys Ser Val Val Thr Thr Pro

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Gly	Val	Ser	Asp
Gly	Phe	Phe	Ile
Ile	Arg	Gly	Gln
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Leu	Gly	Ala	Val
Gly	Ser	Val	Asn
Glu	Gln	Pro	Asn
Thr	Val	Gly	Met
100		105	110
Ser	Leu	Glu	Gln
Phe	Ile	Lys	Asn
Glu	Leu	Tyr	Ser
Ile	Tyr	Ser	Asn
Asp	Leu	Asn	Glu
115		120	125
Ile	Tyr	His	Thr
Ile	Ser	Ser	Gln
Ile	Ser	Asn	Ser
Phe	Leu	Ile	Met
130		135	140
Met	Ser	Asp	Ala
Ile	Ile	Val	Lys
Lys	His	Asp	Asn
Tyr	Ile	Leu	Lys
145		150	155
Gly	Glu	Gly	Cys
Glu	Gln	Ile	Tyr
Ile	Tyr	Asn	Tyr
Glu	Glu	Glu	Phe
Ile	Glu	Ile	Glu
165		170	175
Leu	Arg	Gly	Ala
Arg	Ala	Arg	Ser
Glu	Gly	Asn	Asn
Asn	Met	Phe	Gln
Glu	Glu	Gln	Ala
Leu			
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Ile	Arg	Phe	Arg
Asn	Ala	Ser	Ser
Glu	Glu	Met	Val
Met	Asn	Ala	Ala
195		200	205
Tyr	Leu	Ser	Ala
Ala	Leu	Phe	Arg
Tyr	Lys	Glu	Phe
Phe	Asp	Asp	Glu
Ile	Leu	Ile	Tyr
210		215	220
Phe	Lys	Asp	Asn
Lys	Asn	Phe	Gly
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225		230	235
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Tyr	Ile	Asn	Thr
Lys	Lys	Glu	Leu
Leu	Val	Ile	Leu
Ala	Ser	Val	Leu
245		250	255
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Gly	Leu	Ile	Met
Asp	Ile	Glu	Arg
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Val	Asn	Asn	Thr
Asn	Thr	Asp	Asp
Ile	Ile	Lys	Lys
Lys	Ile	Leu	Asp
Asp	Asn	Asp	Glu
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Ile	Ile	Lys	Lys
Lys	Ile	Leu	Asp
Asp	Asn	Asp	Glu
290		295	300
Lys	Ile	Asn	Phe
Asn	Phe	Arg	Glu
305		310	315
Gly	Ile	Lys	Ile
Lys	Ile	Asn	Arg
Asp	Asp	Val	Ile
340		345	350
Ser	Thr	Ile	Thr
Thr	Ile	Thr	Tyr
Ile	Val	Gly	Ala
Gly	Val	Glu	Ala
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Ser	Val	Ser	Ala
Ala	Thr	Ser	Asn
Gly	Thr	Gly	Thr
370		375	380
Gly	Thr	Gly	Thr
385		390	395
Gly	Thr	Gly	Thr
Glu	Ser	Gly	Gly
405		410	415
Glu	Ala	Gly	Gly
Gly	Thr	Ser	Gly
420		425	430
Gly	Lys	Ala	Gly
Ala	Gly	Thr	Gly
435		440	445
Ala	Gly	Ser	Asp
Gly	Asp	Lys	Ala
450		455	460
Ser	Gly	Thr	Gly
465		470	475
Ala	Ser	Asn	Ala
Lys	Ile	Pro	Gly
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485		490	495
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Thr	Ile	Val	Asn

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<210> 53
<211> 275
<212> PRT
<213> Babesia microti

<400> 53

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					20				25					30	
Pro	Pro	Asp	Ile	Glu	Pro	Thr	Ser	Thr	Ser	Leu	Glu	Thr	Asn	Val	Val
					35				40					45	
Thr	Asn	Tyr	Ile	Pro	Glu	Pro	Asn	Ala	Asp	Ser	Glu	Ser	Val	His	Val
					50				55					60	
Glu	Ile	Gln	Glu	His	Asp	Asn	Ile	Asn	Pro	Gln	Asp	Ala	Cys	Asp	Ser
					65				70					75	80
Glu	Pro	Leu	Glu	Gln	Met	Asp	Ser	Asp	Thr	Arg	Val	Leu	Pro	Glu	Ser
					85				90					95	
Leu	Asp	Glu	Gly	Val	Pro	His	Gln	Phe	Ser	Arg	Leu	Gly	His	His	Ser
					100				105					110	
Asp	Met	Ala	Ser	Asp	Ile	Asn	Asp	Glu	Glu	Pro	Ser	Phe	Lys	Ile	Gly
					115				120					125	
Glu	Asn	Asp	Ile	Ile	Gln	Pro	Arg	Trp	Glu	Asp	Thr	Ala	Pro	Tyr	His
					130				135					140	
Ser	Ile	Asp	Asp	Glu	Glu	Leu	Asp	Asn	Leu	Met	Arg	Leu	Thr	Ala	Gln
					145				150					155	160
Glu	Thr	Ser	Asp	Asp	His	Glu	Glu	Gly	Asn	Gly	Lys	Leu	Asn	Thr	Asn
					165				170					175	
Lys	Ser	Glu	Lys	Thr	Glu	Arg	Lys	Ser	His	Asp	Thr	Gln	Thr	Pro	Gln
					180				185					190	
Glu	Ile	Tyr	Glu	Glu	Leu	Asp	Asn	Leu	Leu	Arg	Leu	Thr	Ala	Gln	Glu
					195				200					205	
Ile	Tyr	Glu	Glu	Arg	Lys	Glu	Gly	His	Gly	Lys	Pro	Asn	Thr	Asn	Lys
					210				215					220	
Ser	Glu	Lys	Ala	Glu	Arg	Lys	Ser	His	Asp	Thr	Gln	Thr	Thr	Gln	Glu
					225				230					235	240
Ile	Cys	Glu	Glu	Cys	Glu	Glu	Gly	His	Asp	Lys	Ile	Asn	Lys	Asn	Lys
					245				250					255	
Ser	Gly	Asn	Ala	Gly	Ile	Lys	Ser	Tyr	Asp	Thr	Gln	Thr	Pro	Gln	Glu
					260				265					270	
Thr	Ser	Asp													
					275										

<210> 54
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 54

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<210> 55	
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<212> DNA	
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<220>	
<223> PCR Primer	
<400> 55	
tggtattctta gaagaatagt tata	24
<210> 56	
<211> 306	
<212> DNA	
<213> Babesia microti	
<400> 56	
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ggcctagtga agctgggtggg cctagtggaa ctgggtggcc tagtgaagct ggtgggccta	180
gtgaaactgt tgggcccaagt gaagctggtg ggcctagtga agctgggtggg cctagtggaa	240
ctgggtggcc tagtgaact gggtggccta gtgaagttgg ttggcccaattt gaaccatttg	300
gatatc	306
<210> 57	
<211> 318	
<212> DNA	
<213> Babesia microti	
<400> 57	
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ggcctagtga agctgggtggg cctagtggaa ctgggtggcc tagtgaagct ggtgggccta	180
gtgaaactgt tgggcccaagt gaagctggtg ggcctagtga agctgggtggg cctagtggaa	240
ctgggtggcc tagtgaact gggtggccta gtgaagttgg ttggcccaattt gaaccatttg	300
gatatcacct tcttttgt	318
<210> 58	
<211> 358	
<212> DNA	
<213> Babesia microti	
<400> 58	
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ggcctagtga agctgggtggg cctagtggaa ctgggtggcc tagtgaagct ggtgggccta	180
gtgaaactgt tggcccaagt gaagctggtg ggcctagtga agctgggtggg cctagtgaag	240
ctgggtggcc tagtgaact gggtggccta gtgaaactgt ttggcccaagt gaagctgggt	300
ggcctagtga agctgggtgg cctagtggaa ctgggtggcc tagtgaagct ggtggcc	358
<210> 59	
<211> 409	

<212> DNA

<213> Babesia microti

<400> 59

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gcctagtggaa	gctgggtggc	ctagtgaagc	tgggtggccct	agtgaagctg	gtggggctag	180
tgaagctgg	gggcctagt	aagctggtgg	gcctagtggaa	gctgggtggc	ctagtgaagc	240
tgggtggccct	agtgaagctg	gtggggctag	tggactgg	tggcctagt	aagctggttg	300
gcctagtggaa	gctgggtggc	ctagtgaagc	tggttggccct	agtgaagctg	gttggccctag	360
tgaacgattt	ggatatcagc	ttctttggta	ttctagaaga	atagttata		409

<210> 60

<211> 351

<212> DNA

<213> Babesia microti

<400> 60

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ctgggtggcc	tagtgaagct	ggtggcccta	gtgaagctgg	tgggcctagt	gaagctggtg	120
ggcctagtga	agctggtggg	cctagtgaag	ctgggtggcc	tagtgaagct	ggtggcccta	180
gtgaagctgg	tgggcctagt	gaagctggtt	ggcctagtga	agctggttgg	cctagtgaag	240
ctgggtggcc	tagtggaaact	ggtggcccta	gtgaagctgg	tggcctagt	gaagctggtt	300
ggcctagtga	agctggttgg	cctagtgaag	ctgggtggcc	tagtgaacga	t	351

<210> 61

<211> 410

<212> DNA

<213> Babesia microti

<400> 61

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tgggcctagt	gaagctggtg	ggcctagtga	agctggtggg	cctagtgaag	ctgggtggcc	120
tagtgaagct	ggtggcccta	gtgaagctgg	tgggcctagt	gaagctggtg	ggcctagtga	180
agctggtggg	cctagtgaag	ctgggtggcc	tagtgaagct	ggtggcccta	gtgaagctgg	240
tgggcctagt	gaagctggtt	ggcctagtga	agctggtggg	cctagtggaa	ctgggtggcc	300
tagtgaagct	ggtggcccta	gtgaagctgg	tggcctagt	gaagctggtt	ggcctagtga	360
agctggttgg	cctagtgaac	gattggata	tcagttctt	tggatttcta		410

<210> 62

<211> 416

<212> DNA

<213> Babesia microti

<400> 62

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ctgggtggcc	tagtgaagct	ggtggcccta	gtgaagctgg	tgggcctagt	gaagctggtg	120
ggcctagtga	agctggtggg	cctagtgaag	ctgggtggcc	tagtgaagct	ggtggcccta	180
gtgaagctgg	tgggcctagt	gaagctggtg	ggcctagtga	agctggtggg	cctagtgaag	240
ctgggtggcc	tagtgaagct	ggtggcccta	gtgaagctgg	tggcctagt	gaagctggtg	300
ggcctagtgg	aactggttgg	cctagtgaag	ctgggtggcc	tagtgaagct	ggtggcccta	360
gtgaagctgg	tggcctagt	gaagctggtt	ggcctagtga	acgatttgg	tatcag	416

<210> 63

<211> 356		
<212> DNA		
<213> Babesia microti		
<400> 63		
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ggcctagtga agctggtggg cctagtgaag ctggggcc tagtgaagct ggtgggccta	180	
gtgaagctgg tgggcctagt ggaactgggtt ggcctagtga agctggtgg cctagtgaag	240	
ctggggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctgggtt	300	
ggcctagtga acgatttggta tatcagcttc tttggtattc tagaagaata gttata	356	
<210> 64		
<211> 285		
<212> DNA		
<213> Babesia microti		
<400> 64		
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ctggggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctggtg	120	
ggcctagtga agctggtggg cctagtgaag ctggggcc tagtgaagct ggtgggccta	180	
gtggaaactgg tgggcctagt gaagctgggtt ggcctagtga agctggtgg cctagtgaag	240	
ctggggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt	285	
<210> 65		
<211> 342		
<212> DNA		
<213> Babesia microti		
<400> 65		
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ggcctagtga agctggtggg cctagtgaag ctggggcc tagtgaagct ggtgggccta	180	
gtgaagctgg tgggcctagt ggaactgggtt ggcctagtga agctggtgg cctagtgaag	240	
ctggggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctgggtt	300	
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<210> 66		
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<212> DNA		
<213> Babesia microti		
<400> 66		
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ggcctagtga agctggtggg cctagtgaag ctggggcc tagtgaagct ggtgggccta	180	
gtgaagctgg tgggcctagt gaagctgggtt ggcctagtgg aactgggtgg cctagtgaag	240	
ctggggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctgggtt	300	
ggcctagtga agctgggtgg cctagtgaac gattggata tcagcttctt tggtattcta	360	
gaa	363	
<210> 67		
<211> 363		
<212> DNA		

<213> Babesia microti

<400> 67

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ctggggcc	tagtgaagct	ggtgggccta	gtgaagctgg	tgggcctagt	gaagctgg	120
ggcctagtga	agctgg	cctagtgaag	ctggggcc	tagtgaagct	ggtgggccta	180
gtgaagctgg	tgggcctagt	gaagctgg	ggcctagtgg	aactgttgg	cctagtgaag	240
ctggggcc	tagtgaagct	ggtggccta	gtgaagctgg	tgggcctagt	gaagctgg	300
ggcctagtga	agctgg	cctagtgaac	gattggata	tcagttctt	tggtattcta	360
gaa						363

<210> 68

<211> 101

<212> PRT

<213> Babesia microti

<400> 68

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Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
							20			25			30		
Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
							35			40			45		
Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
							50			55			60		
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
65							70			75			80		
Gly	Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Val	Gly	Trp	Pro	Ile
							85			90			95		
Glu	Pro	Phe	Gly	Tyr											
				100											

<210> 69

<211> 105

<212> PRT

<213> Babesia microti

<400> 69

Ala	Gly	Asp	Thr	Asp	Arg	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
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Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
							20			25			30		
Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
							35			40			45		
Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
							50			55			60		
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
65							70			75			80		
Gly	Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Val	Gly	Trp	Pro	Asn
							85			90			95		
Glu	Pro	Phe	Gly	Tyr	His	Leu	Leu	Trp							
				100				105							

<210> 70

Babesia microti protein sequence

<211> 118
<212> PRT
<213> Babesia microti

<400> 70
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly
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Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
20 25 30
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
35 40 45
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
50 55 60
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
65 70 75 80
Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser
85 90 95
Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp
100 105 110
Pro Ser Glu Ala Gly Trp
115

<210> 71
<211> 136
<212> PRT
<213> Babesia microti

<400> 71
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly
1 5 10 15
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
20 25 30
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
35 40 45
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
50 55 60
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
65 70 75 80
Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser
85 90 95
Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp
100 105 110
Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu
115 120 125
Trp Tyr Ser Arg Arg Ile Val Ile
130 135

<210> 72
<211> 116
<212> PRT
<213> Babesia microti

<400> 72
Glu Ala Gly Gly Pro Ser Glu Gly Thr Val Gly Pro Ser Glu Ala Gly Gly

1	5	10	15
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala			
20	25	30	
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser			
35	40	45	
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly			
50	55	60	
Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala			
65	70	75	80
Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser			
85	90	95	
Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp			
100	105	110	
Pro Ser Glu Arg			
115			

<210> 73
<211> 136
<212> PRT
<213> Babesia microti

1	5	10	15
Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro			
20	25	30	
Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly			
35	40	45	
Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu			
50	55	60	
Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro			
65	70	75	80
Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly			
85	90	95	
Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly			
100	105	110	
Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro			
115	120	125	
Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe			
130	135		

<210> 74
<211> 138
<212> PRT
<213> Babesia microti

1	5	10	15
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly			
20	25	30	
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala			
35	40	45	
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser			
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly			

50	55	60
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala		
65	70	75
Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser		
85	90	95
Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp		
100	105	110
Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala		
115	120	125
Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln		
130	135	

<210> 75
<211> 118
<212> PRT
<213> Babesia microti

<400> 75		
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly		
1	5	10
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala		
20	25	30
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser		
35	40	45
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly		
50	55	60
Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala		
65	70	75
Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser		
85	90	95
Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr		
100	105	110
Ser Arg Arg Ile Val Ile		
115		

<210> 76
<211> 94
<212> PRT
<213> Babesia microti

<400> 76		
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly		
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Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala		
20	25	30
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser		
35	40	45
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp		
50	55	60
Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala		
65	70	75
Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp		
85	90	

<210> 77
<211> 113
<212> PRT
<213> Babesia microti

<400> 77
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly
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Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
20 25 30
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
35 40 45
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
50 55 60
Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
65 70 75 80
Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser
85 90 95
Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr
100 105 110
Ser

<210> 78
<211> 120
<212> PRT
<213> Babesia microti

<400> 78
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly
1 5 10 15
Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
20 25 30
Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
35 40 45
Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
50 55 60
Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala
65 70 75 80
Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser
85 90 95
Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly
100 105 110
Tyr Gln Leu Leu Trp Tyr Ser Arg
115 120

<210> 79
<211> 120
<212> PRT
<213> Babesia microti

<400> 79
Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly
1 5 10 15

Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
 20 25 30
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
 35 40 45
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
 50 55 60
 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala
 65 70 75 80
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser
 85 90 95
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly
 100 105 110
 Tyr Gln Leu Leu Trp Tyr Ser Arg
 115 120

<210> 80

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 80

cagagcagta ctgatgatat taagaaggc

29

<210> 81

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 81

caatatgaat tcagtgaata tttacaataa atgttaataa tgc

43

<210> 82

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 82

cataacaata ttccagaacc caatgcggat tc

32

<210> 83

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 83

cgctagaatt cattagaaag ccttaaacat gc

32

<210> 84

<211> 2001

<212> DNA

<213> Babesia

<400> 84

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 tttagggaaa tggtaatgtat agtaacatgt gcaaacacaa aatttgaagc cctaatgtat 180
 ttgataattt ccgactgtgt gaaaaaaagt attaagataa acagagatgt gattcaagc 240
 tacaaattgc ttcttccac aatcacctat atttgtggag ctggagttga agctgttaact 300
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 actagtgtgt ctgctacatc tactttaact ggtatgggt gactgaatc tggtggaaca 420
 gctgaaacta ctacgtctag tggactgaa gctgtggaa ctatggaaact tactacgtct 480
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 ggtgtgtt gtgataaaagc tggactgaa actagtggaa ctatgtgtc tagtggaaact 600
 ggtgtgtt gagctggtag tggtggactt agtggacatg cttctaatgc aaaaattcct 660
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 aatgcggatt cagaatctgtt acatgttggaa atccaggaac atgataacat caatccacaa 780
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 aataaaatgtt agaagactgtt aagaaaatcg catgataactc agacaccgc当地 1140
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 cagacaacgc aagaaatatgtt tgaagatgtt gaagaaggcc atgacaaaat caataagaat 1320
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 gctggatataa aatcgatgtt tactcagaca ccgcaggaaa caatgttgc tcatgtt gatgtt 1680
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<210> 85

<211> 666

<212> PRT

<213> Babesia

<400> 85

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 35 40 45

Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser
 50 55 60

Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser
 65 70 75 80

Tyr Lys Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala Gly Val
 85 90 95

Glu Ala Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly Thr Glu Ser
 100 105 110

Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala Thr Ser Thr
 115 120 125

Leu Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala Gly Thr Thr
 130 135 140

Thr Ser Ser Gly Thr Glu Ala Gly Gly Thr Ser Gly Thr Thr Thr Ser
 145 150 155 160

Ser Gly Ala Ala Ser Gly Lys Ala Gly Thr Gly Thr Ala Gly Thr Thr
 165 170 175

Thr Ser Ser Glu Gly Ala Gly Ser Asp Lys Ala Gly Thr Gly Thr Ser
 180 185 190

Gly Thr Thr Thr Ser Ser Gly Thr Gly Ala Gly Gly Ala Gly Ser Gly
 195 200 205

Gly Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr
 210 215 220

Leu Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn Ile Pro Glu Pro
 225 230 235 240

Asn Ala Asp Ser Glu Ser Val His Val Glu Ile Gln Glu His Asp Asn
 245 250 255

Ile Asn Pro Gln Asp Ala Cys Asp Ser Glu Pro Leu Glu Gln Met Asp
 260 265 270

Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly Val Pro His
 275 280 285

Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser Asp Ile Asn
 290 295 300

Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile Gln Pro
 305 310 315 320

Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp Glu Glu Leu
 325 330 335

Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp Asp His Glu
 340 345 350

Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr Glu Arg
 355 360 365

Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu Leu Asp
 370 375 380

Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg Lys Glu
 385 390 395 400

Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys
 405 410 415

Ser His Asp Thr Gln Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu
 420 425 430

Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys
 435 440 445

Ser Tyr Asp Thr Gln Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu
 450 455 460

Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys
 465 470 475 480

Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu
 485 490 495

Gly His Asp Lys Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys
 500 505 510

Ser His Asp Thr Gln Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu
 515 520 525

Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys
 530 535 540

Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu
 545 550 555 560

Glu His Gly Asn Leu Asn Lys Asn Lys Ser Gly Lys Ala Gly Ile Lys
 565 570 575

Ser His Asn Thr Gln Thr Pro Leu Lys Lys Asp Phe Cys Lys Glu
 580 585 590

Gly Cys His Gly Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg Asp Pro
 595 600 605

Ser Ser Pro Asp Asp Asp Gly Gly Cys Glu Cys Gly Met Thr Asn His
 610 615 620

Phe Val Phe Asp Tyr Lys Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr
 625 630 635 640

Glu Thr Ser Thr His Tyr Tyr Ile Ala Met Ala Ala Ile Phe Thr Ile
 645 650 655

Ser Leu Phe Pro Cys Met Phe Lys Ala Phe
 660 665

<210> 86

<211> 3402

<212> DNA

<213> Babesia

<400> 86

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ttaaagagcc	tcaagactga	aacatccact	cattattaca	ttgccatggc	tgcaattttt	3360
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<210> 87

<211> 1132

<212> PRT

<213> Babesia

<400> 87

Met Gln His His His His His Leu Thr Phe Gly Asn Ile Arg Phe
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His Asn Ile Asn Leu Pro Pro Phe Ser Leu Gly Ile Ile His Ser Ile
 20 25 30

Thr Val Glu Lys Ala Ile Asn Ser Glu Asp Phe Asp Gly Ile Gln Thr
 35 40 45

Leu Leu Gln Val Ser Ile Ile Ala Ser Tyr Gly Pro Ser Gly Asp Tyr
50 55 60

Ser Ser Phe Val Phe Thr Pro Val Val Thr Ala Asp Thr Asn Val Phe
65 70 75 80

Tyr Lys Leu Glu Thr Asp Phe Lys Leu Asp Val Asp Val Ile Thr Lys
 85 90 95

Thr Ser Leu Glu Leu Pro Thr Ser Val Pro Gly Phe His Tyr Thr Glu
100 105 110

Thr Ile Tyr Gln Gly Thr Glu Leu Ser Lys Phe Ser Lys Pro Gln Cys

115	120	125
Lys Leu Asn Asp Pro Pro Ile Thr Thr Gly Ser Gly Leu Gln Ile Ile		
130	135	140
His Asp Gly Leu Asn Asn Ser Thr Ile Ile Thr Asn Lys Glu Val Asn		
145	150	155
Val Asp Gly Thr Asp Leu Val Phe Phe Glu Leu Leu Pro Pro Ser Asp		
165	170	175
Gly Ile Pro Thr Leu Arg Ser Lys Leu Phe Pro Val Leu Lys Ser Ile		
180	185	190
Pro Met Ile Ser Thr Gly Val Asn Glu Leu Leu Glu Val Leu Glu		
195	200	205
Asn Pro Ser Phe Pro Ser Ala Ile Ser Asn Tyr Thr Gly Leu Thr Gly		
210	215	220
Arg Leu Asn Lys Leu Leu Thr Val Leu Asp Gly Ile Val Asp Ser Ala		
225	230	235
Ile Ser Val Lys Thr Thr Glu Thr Val Pro Asp Asp Ala Glu Thr Ser		
245	250	255
Ile Ser Ser Leu Lys Ser Leu Ile Lys Ala Ile Arg Asp Asn Ile Thr		
260	265	270
Thr Thr Arg Asn Glu Val Thr Lys Asp Asp Val Tyr Ala Leu Lys Lys		
275	280	285
Ala Leu Thr Cys Leu Thr Thr His Leu Ile Tyr His Ser Lys Val Asp		
290	295	300
Gly Ile Ser Phe Asp Met Leu Gly Thr Gln Lys Asn Lys Ser Ser Pro		
305	310	315
Leu Gly Lys Ile Gly Thr Ser Met Asp Asp Ile Ile Ala Met Phe Ser		
325	330	335
Asn Pro Asn Met Tyr Leu Val Lys Val Ala Tyr Leu Gln Ala Ile Glu		
340	345	350
His Ile Phe Leu Ile Ser Thr Lys Tyr Asn Asp Ile Phe Asp Tyr Thr		
355	360	365
Ile Asp Phe Ser Lys Arg Glu Ala Thr Asp Ser Gly Ser Phe Thr Asp		
370	375	380
Ile Leu Leu Gly Asn Lys Val Lys Glu Ser Leu Ser Phe Ile Glu Gly		
385	390	395
Leu Ile Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly Val Thr Gly		

405	410	415
Gly Ile Ser Ser Ser Ser Leu Phe Asp Glu Ile Phe Asp Glu Leu Asn		
420	425	430
Leu Asp Gln Ala Thr Ile Arg Thr Leu Val Ala Pro Leu Asp Trp Pro		
435	440	445
Leu Ile Ser Asp Lys Ser Leu His Pro Ser Leu Lys Met Val Val Val		
450	455	460
Leu Pro Gly Phe Phe Ile Val Pro Gly Ser Thr Asp Asp Ile Lys Lys		
465	470	480
Ala Phe Asp Glu Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys Ile		
485	490	495
Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val Asn		
500	505	510
Glu Val Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile		
515	520	525
Ile Ser Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile		
530	535	540
Ser Ser Tyr Lys Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala		
545	550	560
Gly Val Glu Ala Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly Thr		
565	570	575
Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala Thr		
580	585	590
Ser Thr Leu Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala Gly		
595	600	605
Thr Thr Thr Ser Ser Gly Thr Glu Ala Gly Gly Thr Ser Gly Thr Thr		
610	615	620
Thr Ser Ser Gly Ala Ala Ser Gly Lys Ala Gly Thr Gly Thr Ala Gly		
625	630	640
Thr Thr Thr Ser Ser Glu Gly Ala Gly Ser Asp Lys Ala Gly Thr Gly		
645	650	655
Thr Ser Gly Thr Thr Ser Ser Gly Thr Gly Ala Gly Gly Ala Gly		
660	665	670
Ser Gly Gly Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile		
675	680	685
Met Thr Leu Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn Ile Pro		

690	695	700
Glu Pro Asn Ala Asp Ser Glu Ser Val His Val Glu Ile Gln Glu His		
705	710	715
720		
Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser Glu Pro Leu Glu Gln		
725	730	735
Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly Val		
740	745	750
Pro His Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser Asp		
755	760	765
Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile		
770	775	780
Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp Glu		
785	790	795
800		
Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp Asp		
805	810	815
His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr		
820	825	830
Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu		
835	840	845
Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg		
850	855	860
Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu		
865	870	875
880		
Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys		
885	890	895
Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly		
900	905	910
Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys		
915	920	925
Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly		
930	935	940
945		
Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His		
950	955	960
Glu Glu Gly His Asp Lys Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu		
965	970	975
Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys		

980	985	990
Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly		
995	1000	1005
Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His		
1010	1015	1020
Glu Glu Glu His Gly Asn Leu Asn Lys Asn Ser Gly Lys Ala Gly		
1025	1030	1035
Ile Lys Ser His Asn Thr Gln Thr Pro Leu Lys Lys Asp Phe Cys		
1045	1050	1055
Lys Glu Gly Cys His Gly Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg		
1060	1065	1070
Asp Pro Ser Ser Pro Asp Asp Gly Gly Cys Glu Cys Gly Met Thr		
1075	1080	1085
Asn His Phe Val Phe Asp Tyr Lys Thr Thr Leu Leu Leu Lys Ser Leu		
1090	1095	1100
Lys Thr Glu Thr Ser Thr His Tyr Tyr Ile Ala Met Ala Ala Ile Phe		
1105	1110	1115
Thr Ile Ser Leu Phe Pro Cys Met Phe Lys Ala Phe		
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<210> 89		
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<212> DNA		
<213> Artificial Sequence		
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<400> 89		
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<210> 90		
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<212> DNA
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<220>
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<400> 90
 cgtggatcca ctgatgatat taagaag

27

<210> 91
 <211> 1148
 <212> DNA
 <213> Babesia microti

<400> 91
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 agacgcggat tttctggcg agtttaccc agatgaatta ttgggtgatt tcaaggcacc 180
 ttataaaat gtctcataag aatcaccatt caatttgtcc agacactaaa tatttgtcaa 240
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 attgcagtct aaatgaattt attggattac attcaacttca aataagttt cagtttagtt 480
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 gcccggagaat gtacagktta cgatcttagat aagcggtcgcc atcaggcacc ccagttgtgt 600
 acaaataaga gtctcagacc aactgkgtkg taaataatg tattcacaaac ccataactcca 660
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 cccagctaca ggggtttcaa ttgggtgtgt aatattggc aatcaattaa ttccacagtc 900
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 gattcaagat aagacttgcg gttctacttc aaccgtttac tatttttttttata 1020
 atcttagcaaa tttgttttgc gggatgaccc agaattttt attcctcaaa atcgaagtag 1080
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 gaattttta 1148

<210> 92
 <211> 605
 <212> DNA
 <213> Babesia microti

<220>
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 <223> n=A,T,C or G

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 ctctaggtgt tatgaaaatgttataaca ttaaaatttgc ggggtgagaag taatgaggat 180
 aaatgttaattt acccataaga acttcgggtcc agcaactgaa aagtagtggaa aacaactaaa 240
 tgaacaaactt ctgagaaaag gagaccatgt ttaataggaa ttcatttcata cagaactatg 300
 aaacactgggtt acttggtaa tacagacaaac tacagaaaatgttggaaatggatacgaa tgtcagagcc 360

ttcttttat ttttttctg agagatttga tcttgcttag agatgccaat tgagttctat 420
 actccaataa ttgagcactt gtacccgtac cttaataatc ctccggaaaa attatagata 480
 tgaggggagta taggtatgag aaaattgtct catttgcattt ctgaccccm cttgtatcct 540
 gatctccact tggntgac ctttcacttg tttgntgacc ttcccttgtt tggtgaccctt 600
 ccttg 605

<210> 93
<211> 631
<212> DNA
<213> Babesia microti

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 ttgaatgagg agaaatccag aggtgacaaa agtgcgttga atgatgaggg attgatgagg 180
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 cccactccca gcacacagac aatcctgaaa ccgaagggat ccgagataag gggctatata 480
 ataaaagttt atcaaacagc taatctcatc acattcatag atgcattgtt caaggagttg 540
 aacggttcata ttaaacagac aacaacttcg tctggtkgtt ggcactaaag aaactaatgg 600
 cactaccagt ggttctyctg aaagcaatcc c 631

<210> 94
<211> 632
<212> DNA
<213> Babesia microti

<220>
<221> misc_feature
<222> (1)...(632)
<223> n=A,T,C or G

<400> 94
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 ttaacaatta caaagtggaa ctgtacaattt ccattttctt aatgccattt acaagtttag 120
 aatttaggaa atataaatca taagcagata gatcaaaaac agaataatctg gaataatgaa 180
 acataaaaatg gaaatctaaa cttagaagttt gtttataaa gccacaggca ggtactgaac 240
 ctgagttccct ggttaccgc tttttttttt cccttaatgg ggttagactt gctggccccca 300
 aagccactgg tatcatcattt ctgtctttgc atgtccctgtt caagggtctca aggtgtgctg 360
 ctgtgtccag tttgtacaa gagttttttt gttttttttt gttttttttt gttttttttt 420
 gaaacaatttc cacatggggc attctccca gttcatcttc cagaattcaa tattttttttt 480
 tcagttctta attcattgtt gtaagtcaat ctccctttaaa tttttttttt atagaaaagca 540
 atttctctaa cgggcaactt tctgcttgcg tgtaatatgtt atgtgaaatc tagattctgc 600
 ngaggagacc aaaccagtntt atttttttttt gttttttttt ct 632

<210> 95
<211> 426
<212> DNA
<213> Babesia microti

<220>
<221> misc_feature
<222> (1)...(426)
<223> n=A,T,C or G

<400> 95
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ggatgtgaa agggcagaag taatacttg aataaggact tcacatctt caattaaaac 120
tcttctgtgt ctacctgaa attcatgaca gatgaaatta acttgnttc tattcggtt 180
ctccctttat ttctgcagt attataattt caggaaggaa catgcatcat aaattacatg 240
taactttcat gttcagtga tgctggttc tattttgat ctcatttgac agcagtaaag 300
tcatacnaaa aataataaat acctctcatg gagcttgcca tttcctctgc atcttttg 360
gggaagaant ggcctgaaaa gtaaagcgtt aagactcaca aagtcaaaaa cttcagata 420
gaacc 426

<210> 96
<211> 472
<212> DNA
<213> Babesia microti

<220>
<221> misc_feature
<222> (1)...(472)
<223> n=A,T,C or G

<400> 96
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tctctattgc tggataaac accagagcta agcccaactt gaagttgtca catggcttcc 120
acacaaatac acacacacac acaccacaca cacacctt gtatgcacat gcacccccc 180
cccttncaa aaaaaaagga ncctctactc tttaccagca ataaaaaatg aacttaggtga 240
aaagaaaacc aaccttgctt catcatttag tcatagaaaa tgatactggg gttggcattt 300
actatcatta acctaaaata aatgtgtccc tacctaaggg tataaactgt tatctggcct 360
tgtacagatt ttggatctt aattctttt gnngggttgc caatagcatt ttaaggnc 420
agaataaata gaccggatga aatggatgg gctagatgt aatggaggt an 472

<210> 97
<211> 867
<212> DNA
<213> Babesia microti

<220>
<221> misc_feature
<222> (1)...(867)
<223> n=A,T,C or G

<400> 97
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gataatttgta tcagttgtata ttgtgtgtt atatttattt gtattgttat ctcaccaacc 120
ttaacttcgc tgatgtaaat ttggaatct ggattattgg tggataacat gtcacccatca 180
cttaatgata tttttaaaaa ttctgttatca tcggcactag aaatatcaaa tgatttataat 240
gttatgtcat tgactgtata agtactactt cgattttgag gaataataaa ttctgggtca 300

tccctcaaaa caaatttgct agattgnaaa ccagattgct catagtaaac gggtaagta 360
 gaactcgaag tcttatctt aatcctaaca acmatcaaag gatatttagt ggtgtatgaa 420
 acggtcctag tgataacaty catggactgt ggaattaatt gattgccaaa tattacacaa 480
 ccaattgaaa accctgttagc tgggtaact ttggtaaaga ttccatcagt agaaaaaacg 540
 taactagaag aaagaccctc tgaacttga tcaacaaatc ctatTCGTT tatgttaaga 600
 ttacaatat ttgtgacagc aacatcttgc ttggctcga gagacggaga aattgttcat 660
 gtggcagctg ttgtgatgt gtagctgtt gttgatgtgg cagttgtgt tgatgtggca 720
 gtttgtgtg atgtggtagc ttgtgtgtat gtacagatg ttgtgtatgt agcagatcat 780
 actgacagta catgtcatg ttgtgtaaa taggattctt gtaaaggccaa gtatatcctc 840
 actgctgatt tgtctgatatacctcc 867

<210> 98
<211> 815
<212> DNA
<213> Babesia microti

<400> 98
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 atacaaccat agcatcataa aagctacatt tttttttttt atcttaaccc atggcatct 120
 agtcttttc cttaatttatt catcattgtat tgccttaaa tgctcaaagc atctgcccct 180
 tttaaactact tctttctaaa tttagcatata ctctatatgg tcataccat tctgtgtat 240
 catcagggttc cctgtgcagg gggaaaggagg aacgctcaag cactgaggaa tcatcccgct 300
 gtgtgataac gttgatggaa gacaagtgtt acagttgtt gttcaaacaa ataagcatat 360
 tttaaggggaa agaatagtgtt cgtaactaact aaaatctaat ttgaccataa tacgcacatt 420
 agtttggggat tgctcaattt tttaatgaa tcaggcccccc gatttataatt tggaaagtc 480
 catgtggggag cgtaaggatg ggatagttt tttagttagt cttctctggg gaaaggaaag 540
 caaaggccccca actgtataga gttcatttggaa gctgtcacct acgccccctgc cttccctgtcc 600
 cttagatgtt cctcaggatgtt ctgtgtggca agagttcttc cttgtctctg ctctcttagc 660
 cccctctgcc tgcctcccccc agttgatgcg agagttccact ttggagaag ttaactctaa 720
 tcttacacctt ggggagagct actggaaatt aattttccat gtaactggct ttgagttcta 780
 gcaggcttta gattttgtgt gtgtt 815

<210> 99
<211> 1225
<212> DNA
<213> Babesia microti

<220>
<221> misc_feature
<222> (1)...(1225)
<223> n=A,T,C or G
<400> 99
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 gttggcatgg tgctggatca gtaattgaga gctttacact ctgatcctaa ggcattcagac 180
 aaagaaaagc ctggctctgg tggggctt aagcctcaaa atccccctt aatgacacac 240
 ttccctcaag tacataactt tccctaaatc ttctcaaaac agtttcaaaa cttgtgcctg 300
 agtgttcaaa tatatgaacc tacaggggcc attcacattt aaattatcac aggccagataa 360
 gtactagtc atgaaagttc aaatataat tttgttatga aaatataat atgctttaga 420
 atctggggaa cccagaagggg tggagatggg gtcaagattc tctgagatgg ggtcaagatt 480
 ctctgtgtct ccctggccct ggctggatg tccctcgtt ctctgttcca 540

ggtgaccatg tccccatccc agtcccctcg atggtcctca tgccctcctc tcagttcctg 600
 gctgctcccc caccccccgc acatccccat caagggactg gccggctctc atactgctac 660
 ccatgcaggg tgctcatgcc ctgcgcggcc ggcacccctta gtgttcnngt cccttcccg 720
 ccccaactcag cgccacccca tgtcgccagg ccgcgcgtccg cggcacggga ctttgcaagt 780
 acaagcttga gcccgttccc ccctggcggt gcgactgcgg tggctgccgc cttgcgggam 840
 tccggcggtc gttccgacgt cacctactcg stgcttgtgc ctgctctgcg ggccgcgacg 900
 gtccggcggtt cgcatgcca ccctgcgggc cacgcgtggc cttegtcccg cgtcaggcag 960
 gtttgcgaga acgcgcggcc acgsttgcgt cacctgcggc cgggcgcgcg ctataccgtg 1020
 cgcgtggccg cgctcaacgg tgtctcaggg ccagcggccg cccgccaagc cacctacgcg 1080
 caggtcaccg tgtccaccgg acccggagggt gaggccacgc gccccagcgg agtccgtccc 1140
 cctccccaaac cgcaagtccc tctatgcatt ccaagtcatt caggaaccca cgtgactaca 1200
 ccccatgccc caggtgcggc acgag 1225

<210> 100
 <211> 537
 <212> DNA
 <213> Babesia microti

<220>
 <221> misc_feature
 <222> (1)...(537)
 <223> n=A,T,C or G

<400> 100
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 tagaagagag gggagggcag aggaggggaa gcagagggaa gggaaagga aggagaaaaga 120
 gaacagagac agagggagg tcaggtacat cactgtccaa gagatcacat attatccaag 180
 cmacggacag agcttttagga agtgtacaga gaggcacctt tcacccagtg tcctataatg 240
 accatttctg caaatttctt agaacttagt tccattctgc acaaccctc catacctgtc 300
 atcatgtgtc tcacttacta gcctcaagta agctgttaag tggccagtg ttatatgcca 360
 ttcttagtacc ttcatccagt gactgataga agcagagcta aacncccnca gttaaacaat 420
 aaactgaatc cctagaaccc mgtgaccgag agtgktctca taattcttaa aaagatgcta 480
 ttaaatttta tcctgtatca tactacatta tcttttttc ttccctcccc tcccccc 537

<210> 101
 <211> 543
 <212> DNA
 <213> Babesia microti

<220>
 <221> misc_feature
 <222> (1)...(543)
 <223> n=A,T,C or G

<400> 101
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 attggtgagt tccataggtt ggggtgttca cagtgcatt taaaagtgaa attcttgaga 120
 gctgggttgg aggttctatt aggggagtgc ggtacttgta tacctggac tgaagaccag 180
 tcctccctca ttccggaaag gycgycctct tcgaccaagc atgcacttca ggtggacac 240
 acatggagtg ttgagggagg aaagagatcc ccctaagcca gatagatcaa ctaaatgaac 300
 ctggaaata aatgggtga cagatgtarc avcgagaatg ccctcacata ctgaaaatga 360

aataattamc cmccwtttagt tttccatyt gatacctagg cmctytctaa tttaattcca 420
 mcattctkga aaagtgkstt ttgaaagatt ggtgggcaac ccccctaatt antccctnc 480
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 gaa 543

<210> 102
 <211> 811
 <212> DNA
 <213> Babesia microti

<220>
 <221> misc_feature
 <222> (1)...(811)
 <223> n=A,T,C or G

<400> 102
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 agtggaaatg tctttgcagg aatggtgat gttaatcaat attcaagtga ttttgacga 120
 gcattaaacg atcttatgat cgcttttaac gaggctaaaa aaatgtatgc aaaattttct 180
 gaacagatca cggacactat gattcatacc tgcaaaaata gtattgatactagaagca 240
 gatgagaaga atgggtgtca taaaattac cttgaaaaga aagaaattga gctcaaaagt 300
 aaaattgtgg aatttaacgc catttttca aacattgatt taaataatan gtacggktaa 360
 aaatgaaata attaaactgc ttaatgatata tccactatc tctaccgata ttaagtcaat 420
 tggatgaa atatactata aggtcttg tacaattgaa ggtggaaatg ctgaaaattt 480
 tgagtatgaa attaagaaaa agaaagctga actactaga aacctgctga atgataatat 540
 taaaccaatt atgggatata ttaactgaga tatcaatatg ccatccaatt atatcaaata 600
 aagcgaattt atgatatacaa gaaagcattt gaaaagcacg aattagaagc taatgtttg 660
 atatcccaga tattagaaaa tatcagaatt ttggactaa tttaatgac attttaaatg 720
 aagtgaatgg ngcaattgaa gaatttaata aaactattgg acgtcatgaa taacaccatt 780
 ggggaccctt ggtattggta ttgacagcgg g 811

<210> 103
 <211> 2966
 <212> DNA
 <213> Babesia microti

<400> 103
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 atagatactg tggaaaataaa ttcaactgga gataaggaaa ccatttgtat agatattta 120
 tacaattat tatgaaataaa tctaaataaa tgacaaaaaa tcgattatac aaatcacatt 180
 aatgacaaac aaacttgtat acatataattt attaacatta caaaactaaa ttataatatt 240
 tagattgata attgttataa tacttaacaa tatttactt ttaatataa tttttattc 300
 aataatatac tctttcatat tttgtactat tttatataat catatataattt atataattat 360
 atatatttga taattgataa tatcaataat gatgatatac atgaatatgc atatatacc 420
 catataatgt tattatattt agtgcttaca ttattatataa taaatataattt taaataatta 480
 aataataatgt aaaattaaca tagacaatata aatattaatc aatttgataa tattattgaa 540
 tcgtaatgtt gtatattgtg tggataaaaa tgatgttca ttatggaaat caaaacctat 600
 aacaactgtc agtaccacta atgatactat tacaataaaa tacactagta ctgtaattaa 660
 tgccaatttt gctagctacc gtgaatttga ggataggaa cctttacaa taggatttga 720
 atacatgatc gataaatcac aacaagataa attatcacat ccaataaaa ttgataaaaat 780
 caaaatttctt gattatataa ttgaaatttga tgacaatgct aaattaccaa ctggtagtgt 840
 taatgatata tccatcatta cttgcaagca taataatcca gtattaatta gattctcatg 900

tttaatagaa ggatctatct gctatttattt ctacttattt aataatgata caaataaaatg 960
 gaataatcac aaattaaaat atgataaaaac atacaatgaa catactgaca ataatggat 1020
 taattattat aaaatcgatt atagtgaatc tacagaacct actaccgaat ctactacctg 1080
 ttttgtttt cgcaaaaaaaaaa atcataaatc tgagcgtaaa gaatttagaaa attataaata 1140
 tgagggtaca gaattagcaa gaatacattt taataaaggg aaatgtgtaa aattgggtga 1200
 cattaagata aaggataaga atttggaaat ttatgtgaaa cagttaatgt ctgtaaatac 1260
 tccagtaaat tttgacaacc ctacatcgat taatctacca ctgtcagttac taccaatgat 1320
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 gaggtgacc ttacaatagg tttagatcctt agataaaatca caacaaaata aattatcaca 1440
 tccaaataaa attgataaaa tcaaawttty tgatttataa attgaatttgc cacgagatgt 1500
 taaattaaca acaattggta ctgtcaatat tatataatc tatacttgca agcataataa 1560
 tccagtatta gttgaatttta tagttctat agaagratct tactacaattt acttctactc 1620
 aatgaataat gatacaaata aatgaaataa tcataaaataa aaatatgata caagatttaa 1680
 tgaacatact gacatgaatg gtattaaatc ttatgtatc gtacttggta aatgcgttc 1740
 ttatacttgt aaaaatgaat atgagcataa agaatttagca agaatacattt gtaatgaaga 1800
 aaaatgtgta aatgtaaagg tagataacat tggaaataaa aattttggaaa ttatctaaa 1860
 ataatttaac gaagtgtaat atgtaaaata gtttaatgaa gtataatattt attaaaataa 1920
 attcaaaattt tcagaaattt atataattaa ttatttataa tacaaaataa ttaatttacaa 1980
 aataacgtat tattagccat tttagattgtt aaatacatat ttttacatat atttttattt 2040
 aaacttcaa attaatgttt tcatttttat aagcattattt ataatttataa actataattt 2100
 tcagtcatca aataatatcc aaagttatcc tctacattt atcaatcata cagtatacaa 2160
 ttatataaaa tattaacaac atataacaac caacattaat atatacataa tatctttattt 2220
 aatcaatattt taatcaatac aataatttaat agttaactaa ctatacacat agtgtataact 2280
 aaatttattt aaatttataatg ttataatttac aaaaacgtca ttacttattt ttatttcagt 2340
 tatgtttcat agtctaattt agatttggtaa aaacgcattt ggctgatgtt ctggtagca 2400
 agcagttcca cgaagcaaac aatatgactg atgcgttgc ggcgtttct gcggcggtt 2460
 ccgcacagct gccttgcgtt gacgcgttga tgcaggatca cgacgacaag tggcatcaga 2520
 acggctgtt gatggataaa tggtttatcc tgcaagccac cagcccgccg gcgaatgtgc 2580
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 gcagcggtt cctgttccgt gtggaaatgc ttaccgacat caacagccgt aacccgcagg 2760
 tggcttcacg tctgattgaa ccgcgttattt gcctgaaacg ttacgatgcc aaacgtcagg 2820
 agaaaatgcg cgccgcgtt gAACAGTTGA aagggttggaa aaatctctt ggcgtatgt 2880
 acgagaagat aactaaagca ctggcttgat aaataaccga atggcggcaa tagcgccgccc 2940
 attcggggaa ttatccccctt ttatctt 2966

<210> 104
 <211> 1137
 <212> DNA
 <213> Babesia microti

<400> 104
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 gccagcagag catgggttg aacacctcta attccaggc aggtgaatct ttgagttcaa 120
 ggccaaacctc atgtacaaac ctatgtccca gtatasccat gmytaamcag ggaaaccgkg 180
 tctkggggaaa aamcaaaaat aamcagaag agaaaggggg aaatgcctgg ggattagtga 240
 ggttaatgccc agtgggttga ttatttacca gagacaataa gaccgtgaga gctctggaa 300
 ttttgggtt ttgttttttgc cttttccaaat acagggtttc ttggtagctt tggagcctgt 360
 cctggaaactc aggctataga tcaggctggc ctcgaactca cagacatccca cctgcctctg 420
 cctcccaaattt gctgggat aagggtgtgtt ctaccaccac ccgggttgc aagaacttgt 480
 tagttggat gtaaattctt ggtcatccct caaaacaaat ttgcttagatt gtaaaccaga 540
 ttgctcatag taaaacgggtt aagtagaaact cgaagtcttta tcttgaatcc taacaacaat 600
 caaaggatattt ttagtgggtt atgaaacgggtt cctagtgata acatccatgg actgtggat 660

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taattgattg ccaaataatta cacaaccaat tgaaaaccct gtagctgggg taactttgg 720
aaagattcca tcagtagaaa aaaccgttaac tagaagaaaag acccctctgga acttgatcaa 780
caaatccat ttcgtttatg ttaagattca caatatttg gacagcaaca tcttgtgtgg 840
tctccagaga cggagaaaatt gttgatgtgg cagctgttg tgatgtggta gctgtgttg 900
atgtggcagt tgggttgtat gtggcagttg ttgttgatgt ggtagctgtt gttgatgttag 960
cagatgttgt tggatgttagca gatgttgtt atgttagcagc tggttgtat gtagcagctg 1020
ttgttgattt agcggcggtt gctgctgaag taggttattga atttgctata ctcacacttg 1080
tggcatcggt acctgcgcct cctctagtgt ttgttgccaa agtcagagtg agcctgt 1137

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<210> 105  
<211> 1010  
<212> DNA  
<213> Babesia microti
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<400> 105
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aaaccgaagg tatattattt gagtttcat ccttagatatac acagtttct aaggcataag 180
gggtttccc gccagtgcgtt gtatgtattgg ttattgacag tagttttta gttccactt 240
cattatgtat agtcgcggag gctttgcga tagagctggc tagtatagat gaagattttg 300
agtctttgtt tagggggaaag tgaatggtc aattgaagaa ttataaaaaa ctattgacgt 360
catgaataac accattgggg accttggtat ttttattgac agcggatttttcaagcat 420
aaaatcatat atttccacaa tcgccaagat ttctaaagca ataattccctg gacaatggc 480
attatgtttt actgcattaa tattaattct aaatttaatg aaatttcagat gtatataat 540
ttatataatgtt caaaatttac acatttattata tatacatgaa cgaacatctt gctcttaat 600
aaagaatattg agatataaat ggaaataaat taaaagtaac atgagaaaga tgaatataat 660
attaaaatattt taaatttac tgaaataaaa tgaaataaaa gaatgtattt tataataat 720
tataataatattt tagtataacaa tgattctaca ttataacaag cgagaataaa taatttattga 780
ttagtctataa tattatgtat atgttaaggt ttatgtttat gtgttgcataa tatgttataat 840
aatttgtatac catagtgtt gatataatgtt agaggataac ttggatattt atttgatgac 900
tgataattat atgtatataat tataataatgtt kttataaaaaa tgacattaat ttgaaagtt 960
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<210> 106
<211> 1162
<212> DNA
<213> Babesia microti

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<400> 106
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caacaattat tattgaaaact aatgctaaag atgtggatga gttagtgaaa aaatttgc当地 120
caattgc当地 ttttgc当地 aagttcaaga acgtatttct tgataattct gttattgatg 180
aaatttgc当地 aacggttggaa aagatgaagg ttgagtc当地 tactgtatta cctagttgca 240
atggaatcca gaccactgaa aactctagta ctgaccctata tacagtatta tcaaaactta 300
taaagaaaaat taacgactcc ataatcagac ctatgacttc tcggctgatc aacaaatcct 360
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tttggatgtg gacataagcc amcactcttg taamcagrata agtcagatat tctgatggca 480
gatttaccat tgaaggcact gggtccaatt ttagatacac attggcmcca actggcgctt 540
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aggagcaggc acttacatct tgcgtc当地 atggtaacga attcagcata gtaaggcactg 660
caggcaagac aacttacact acacaatcta agttgttgc当地 actttcaag ttatctgc当地 720
agacgtaag ggattttaaat gaagcttagat ttgc当地 ttgacttgg taacatgact gatagtgcta 780
ataaatctaa aqctttggqaq qtctacaaat cgacactaac ttactatgaa atcaaatatca 840
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gtcgaattgg aaaagatttt tggcatatta aaatcaactc cgaatattac ttttgaatca 900
 gttgtttcta aatacaaatt gactggtgtt aatacagtt atactgccaa tgctgatgtg 960
 atcaacgaga caatgttga cgatttgc aaggcaatt cctcataccct atactccctc 1020
 atatctataa ttttccgga ggatattaa ggtcaaggta caagtgaagg tcaacaaca 1080
 agtggaggtc aggatacaaa tgagacaatt ttctcatacc tatactccct catactata 1140
 attttccg aggatattaa ag 1162

<210> 107
 <211> 984
 <212> DNA
 <213> Babesia microti

<400> 107
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 tcttggcttg atagtgggc tggaccatct cagctagcag ctttgaagct gttctggatg 120
 cagaatttttgc agggactgc aacagaggct ttctgagagg ctggatcaat tggctactc 180
 atctgttatttgc tttttttc gaaagcacaa acttttaaag gtaccatatg 240
 tatctgcatt agcacaatgg aatgtgcagt gtgcacaggt caactaaagg tttttcttc 300
 tgggttatgg caggtaaaag gcacctgtca actttataag tccaaacccctt cgaaaatgtat 360
 ggcactatga catcaaaatt ttattccagg gagtccttag acccaacaac ctacatcgga 420
 catgcaccta cagacatatt tacgtcgcca tggatcacga cccacatgca taacaagcgt 480
 cttgttgact ttgaagttcc atttgaagca atttttgcatt ataaactcat aagttattat 540
 accggtaacgg atgtcaacgg caagaataag gttcctgcag agcttaccaa ggcaatatgc 600
 ggcaaaagaag acgtgtgtga gcttaacatt accggtttat tggtgaaaga tattatgtct 660
 aagaaaattgg aggagtgttag gaagaagaat gcatctagtg gtactccatc tgggtgtaca 720
 ctttctaatgt ttccagagga gtgtgtgatt aaaagcaact tacagacgggt tatgaagaag 780
 gatgttacta caacttggaa atcggatgat gtcagcaatt acagtgtgt atccattcac 840
 ttttacatttgc ataaacgtgtt cagacataat actgctttgc gcaattaa gattggcaac 900
 cttgatctac cagcattttc cattgggtt atccactcgat tcttcgtcgat gagggttctc 960
 atgggtgaca agagcattgc cagt 984

<210> 108
 <211> 537
 <212> DNA
 <213> Babesia microti

<400> 108
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 aagtgttggc tctgaagttt ggcaacaaga tcgttgcgt cgaggagaca ggcaggacat 180
 ttgttacatt tgatgagaag ttgaattcaa tagaaataat tacttcgaa aatgtatggca 240
 ctatgacatc aaaattttgc tccaggagat ccctagactc aacaacctac attggacatg 300
 cctctacgtc cacactccc gaagtgcatt ccaggcatt atgtggtaaa gaggacttat 360
 gtacgcttgc cattacggat ctattgttgc aagagattag tgctaagaaa ttggaggag 420
 gtaggaagaa gaatgcatttgc atgtggactc catctggtgg tacacccttc aatgttccag 480
 aggagtgtgtt aatttgcatttgc tggttatgaa gaagaatgtct cgtgcgg 537

<210> 109
 <211> 2559
 <212> DNA
 <213> Babesia microti

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<220>
<221> misc_feature
<222> (1)...(2559)
<223> n=A, T, C or G
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<210> 110

<211> 3141
<212> DNA
<213> Babesia microti

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<220>
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<223> n=A,T,C or G
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<211> 1134
<212> DNA
<213> Babesia microti

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<210> 112
<211> 3011
<212> DNA
<213> Babesia microti

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 <211> 1161
 <212> DNA
 <213> Babesia microti

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<210> 114

<211> 984

<212> DNA

<213> Babesia microti

<400> 114

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<211> 1205

<212> DNA

<213> Babesia microti

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<400> 116

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<210> 117
 <211> 4722
 <212> DNA
 <213> Babesia microti

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<211> 2215

<212> DNA

<213> Babesia microti

<400> 118

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<211> 3002

<212> DNA

<213> Babesia microti

<400> 119

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ggtgccccc ccccttataa tacagaatat ggtaaacaat aatgtatgtga gcaaaaatga 240
gtaaaagtgt atagttataa ggataagaat ttggaaattt atgtaaaata attaaatgaa 300
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aataaagtta ttatatactt aatttataat aatcaaattt ttatthaaca tatggatcta 420
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tgcaatcatt ataaactgga gatacgat tattaacatt gtatttagaa taaggataaa 600
cacaaatgtat atgccataat aaaagtaaag tcaaattgact agtatattt acaacgataa 660
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<211> 1312

<212> PRT

<213> Babesia microti

<400> 120

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Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr
35 40 45

Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser
 50 55 60

Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser
65 70 75 80

Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg
85 90 95

Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile
 100 105 110

Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly
 115 120 125

Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu
 130 135 140

Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr
 145 150 155 160
 Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr
 165 170 175
 Thr Gly Cys Phe Gly Glu His Asn Ile Lys Lys Phe Arg Lys Val Gly
 180 185 190
 Ser Thr Tyr Asn Asp Ile Ser Asn Ala Phe Asp Ile Val Pro Trp Ile
 195 200 205
 Pro Ala His Phe Val Val Thr Gln Lys Val Asp Phe Ser Ile Pro Phe
 210 215 220
 Asp Leu Phe Glu Ser Asn Tyr His Ser Ile Leu Leu Pro Ala Gly Val
 225 230 235 240
 Asn His Ser Ile His Ile Asn Thr Glu Thr Gly Asn Val Asp Ser Val
 245 250 255
 Val Phe Phe Leu Asn Pro Leu Ala Lys His Met Leu Thr Phe Gly Asn
 260 265 270
 Ile Arg Phe His Asn Ile Asn Leu Pro Pro Phe Ser Leu Gly Ile Ile
 275 280 285
 His Ser Ile Thr Val Glu Lys Ala Ile Asn Ser Glu Asp Phe Asp Gly
 290 295 300
 Ile Gln Thr Leu Leu Gln Val Ser Ile Ile Ala Ser Tyr Gly Pro Ser
 305 310 315 320
 Gly Asp Tyr Ser Ser Phe Val Phe Thr Pro Val Val Thr Ala Asp Thr
 325 330 335
 Asn Val Phe Tyr Lys Leu Glu Thr Asp Phe Lys Leu Asp Val Asp Val
 340 345 350
 Ile Thr Lys Thr Ser Leu Glu Leu Pro Thr Ser Val Pro Gly Phe His
 355 360 365
 Tyr Thr Glu Thr Ile Tyr Gln Gly Thr Glu Leu Ser Lys Phe Ser Lys
 370 375 380
 Pro Gln Cys Lys Leu Asn Asp Pro Pro Ile Thr Thr Gly Ser Gly Leu
 385 390 395 400
 Gln Ile Ile His Asp Gly Leu Asn Asn Ser Thr Ile Ile Thr Asn Lys
 405 410 415
 Glu Val Asn Val Asp Gly Thr Asp Leu Val Phe Phe Glu Leu Leu Pro
 420 425 430

Pro Ser Asp Gly Ile Pro Thr Leu Arg Ser Lys Leu Phe Pro Val Leu
 435 440 445
 Lys Ser Ile Pro Met Ile Ser Thr Gly Val Asn Glu Leu Leu Leu Glu
 450 455 460
 Val Leu Glu Asn Pro Ser Phe Pro Ser Ala Ile Ser Asn Tyr Thr Gly
 465 470 475 480
 Leu Thr Gly Arg Leu Asn Lys Leu Leu Thr Val Leu Asp Gly Ile Val
 485 490 495
 Asp Ser Ala Ile Ser Val Lys Thr Thr Glu Thr Val Pro Asp Asp Ala
 500 505 510
 Glu Thr Ser Ile Ser Ser Leu Lys Ser Leu Ile Lys Ala Ile Arg Asp
 515 520 525
 Asn Ile Thr Thr Thr Arg Asn Glu Val Thr Lys Asp Asp Val Tyr Ala
 530 535 540
 Leu Lys Lys Ala Leu Thr Cys Leu Thr Thr His Leu Ile Tyr His Ser
 545 550 555 560
 Arg Val Asp Gly Ile Ser Phe Asp Met Leu Gly Thr Gln Lys Asn Lys
 565 570 575
 Ser Ser Pro Leu Gly Lys Ile Gly Thr Ser Met Asp Asp Ile Ile Ala
 580 585 590
 Met Phe Ser Asn Pro Asn Met Tyr Leu Val Lys Val Ala Tyr Leu Gln
 595 600 605
 Ala Ile Glu His Ile Phe Leu Ile Ser Thr Lys Tyr Asn Asp Ile Phe
 610 615 620
 Asp Tyr Thr Ile Asp Phe Ser Lys Arg Glu Ala Thr Asp Ser Gly Ser
 625 630 635 640
 Phe Thr Asp Ile Leu Leu Gly Asn Lys Val Lys Glu Ser Leu Ser Phe
 645 650 655
 Ile Glu Gly Leu Ile Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly
 660 665 670
 Val Thr Gly Gly Ile Ser Ser Ser Leu Phe Asp Glu Ile Phe Asp
 675 680 685
 Glu Leu Asn Leu Asp Gln Ala Thr Ile Arg Thr Leu Val Ala Pro Leu
 690 695 700
 Glu Glu Ile Lys Asn Glu Leu Lys Thr Ile Ser Ser Gln Lys Ile Ala
 705 710 715 720

Asp Ala Thr Val Thr Pro Ser Thr Pro Asn Thr Asn Val Asn Ile Lys
 725 730 735

Thr Ile Ile Ser Lys Ile Lys Lys Ile Leu Met Ile Ser Glu Thr Ile
 740 745 750

Ser Ser Thr Ala Leu Ala Arg Leu Ser Ala Val Leu Ser Ile Leu Gly
 755 760 765

Arg Gly Thr Ser Thr Asn Val Ile Pro Glu Arg Leu Thr Ser Ile Val
 770 775 780

Val Asp Leu Lys Ser Ala Thr Val Pro Gln Glu Val Ala Leu Lys Asn
 785 790 800

Gly Val Tyr Lys Leu Lys Asp Gln Phe Lys Leu Thr His Lys Met Ile
 805 810 815

Pro Val Phe Gly Ser Val Gln Leu Gln Ile Pro Glu Lys Ser Thr Val
 820 825 830

Val Gln Ile Ser Val Val Glu His Glu Asn Asp Thr Lys Met Ala Ile
 835 840 845

Ile Thr Leu Asp Asp His Ser Lys Leu Thr Leu Glu Arg Val Ile Leu
 850 855 860

Ser Glu Thr Pro Thr Val Val Gly Leu Thr His Thr Thr Gln Asp Pro
 865 870 875 880

Leu Asp Val Leu Leu Ser Ile Phe Val Lys Met Asp Asn Thr Thr Asp
 885 890 895

Asp Gly Val Met Glu Gly Tyr Leu Asp Leu Asp Leu Asn Ser Lys Ile
 900 905 910

Gly Asn Phe Ile Ser Ala Ile Glu Leu Thr Asp Leu Thr Asn Thr Val
 915 920 925

Lys Ser Ala Ser Val His Pro Pro Gln Leu Lys Val Leu Ala Leu Lys
 930 935 940

Phe Gly Asn Lys Ile Val Asp Val Glu Glu Thr Gly Arg Thr Phe Val
 945 950 955 960

Thr Phe Asp Glu Lys Leu Asn Ser Ile Glu Ile Ile Thr Phe Glu Asn
 965 970 975

Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser Arg Glu Ser Leu Asp Pro
 980 985 990

Thr Thr Tyr Ile Gly His Ala Pro Thr Asp Ile Phe Thr Ser Pro Trp
 995 1000 1005

Ile Thr Thr His Met His Asn Lys Arg Leu Val Asp Phe Glu Val Pro
 1010 1015 1020
 Phe Glu Ala Ile Phe Asp Asp Lys Leu Ile Ser Tyr Tyr Thr Gly Thr
 1025 1030 1035 1040
 Asp Val Asn Gly Lys Asn Lys Val Pro Ala Glu Leu Thr Lys Ala Ile
 1045 1050 1055
 Cys Gly Lys Glu Asp Val Cys Glu Leu Asn Ile Thr Gly Leu Leu Leu
 1060 1065 1070
 Lys Asp Ile Ser Ala Lys Lys Leu Glu Glu Cys Arg Lys Lys Asn Ala
 1075 1080 1085
 Ser Ser Gly Thr Pro Ser Gly Gly Thr Pro Ser Asn Val Pro Glu Glu
 1090 1095 1100
 Cys Val Ile Lys Ser Asn Leu Gln Thr Val Met Lys Lys Asp Val Thr
 1105 1110 1115 1120
 Thr Thr Leu Lys Ser Asp Asp Val Ser Asn Tyr Ser Val Val Ser Ile
 1125 1130 1135
 His Phe Tyr Ile Asp Asn Val Phe Arg His Asn Thr Ala Phe Gly Arg
 1140 1145 1150
 Ile Lys Ile Gly Asn Leu Asp Leu Pro Ala Phe Ser Ile Gly Phe Ile
 1155 1160 1165
 His Ser Ile Phe Val Glu Arg Val Leu Met Gly Asp Lys Ser Leu Ala
 1170 1175 1180
 Ser Val Gly Ile Ile Thr Asn Tyr Gly Pro Ser Gly Asp Tyr Glu Leu
 1185 1190 1195 1200
 Leu Arg Tyr Met Gln Val Glu Glu Gly Lys Asn Tyr Phe Lys Leu Val
 1205 1210 1215
 Gln Gly Pro Glu Ile Thr Ala Asp Tyr Ile Gly Ser Gly Leu Thr Lys
 1220 1225 1230
 His Lys Arg Leu Thr Met Asn Gly Ala Ser Thr Gly Ser Ile Gly Phe
 1235 1240 1245
 Glu Thr Asn Tyr Lys Glu Ser Ile Leu Phe Asn Glu Phe Met Arg Pro
 1250 1255 1260
 Thr Asn Lys Ile Val Thr Leu Phe Tyr Thr Asp Ser Glu Thr Val Asn
 1265 1270 1275 1280
 Leu Ile Lys Leu His Ser Leu Glu Asn Val Lys His Gly Val Thr Tyr
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Ser Ile Tyr Gly Ala Phe Pro Ile Glu Glu Ser Ser Pro Glu Ser Ser
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<210> 121
 <211> 309
 <212> PRT
 <213> Babesia microti

<400> 121
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Val Asn Gln Tyr Ser Ser Asp Phe Gly Arg Ala Leu Asn Asp Leu Met
 35 40 45

Ile Ala Phe Asn Glu Ala Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln
 50 55 60

Ile Thr Asp Thr Met Ile His Thr Cys Lys Asn Ser Ile Asp Ile Leu
 65 70 75 80

Glu Ala Asp Glu Lys Asn Gly Gly His Lys Asn Tyr Leu Glu Lys Lys
 85 90 95

Glu Ile Glu Leu Lys Ser Lys Ile Val Glu Phe Asn Ala Ile Phe Ser
 100 105 110

Asn Ile Asp Leu Asn Asn Ser Thr Val Lys Asn Glu Ile Ile Lys Leu
 115 120 125

Leu Asn Asp Ile Ser Thr Ile Ser Thr Asp Ile Lys Ser Ile Val Asp
 130 135 140

Glu Ile Tyr Tyr Lys Ala Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu
 145 150 155 160

Asn Phe Glu Tyr Glu Ile Lys Lys Lys Ala Glu Leu Leu Arg Asn
 165 170 175

Leu Leu Asn Asp Asn Ile Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile
 180 185 190

Tyr Asn Met His Ile Pro Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp
 195 200 205

Ile Lys Lys Ala Phe Glu Lys His Glu Leu Glu Ala Asn Val Leu Ile
 210 215 220

Ser Lys Ile Leu Glu Asn Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp
 225 230 235 240

Ile Leu Asn Glu Val Asn Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile
 245 250 255

Asp Val Met Asn Asn Thr Ile Gly Asp Leu Gly Ile Val Ile Asp Ser
 260 265 270

Gly Ile Ile Ser Ser Ile Lys Ser Tyr Ile Ser Thr Ile Ala Lys Ile
 275 280 285

Ser Asn Ser Ile Ile Pro Gly Gln Met Ala Leu Val Phe Thr Ala Leu
 290 295 300

Ile Leu Ile Leu Asn
 305

<210> 122
 <211> 222
 <212> PRT
 <213> Babesia microti

<400> 122
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Asp Ala Thr Ser Val Ser Ile Ala Asn Ser Ile Pro Thr Ser Ala Ala
 20 25 30

Thr Ala Ala Gln Ser Thr Thr Ala Ala Thr Ser Thr Thr Ala Ala Thr
 35 40 45

Ser Thr Thr Ser Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr Thr Ala
 50 55 60

Thr Thr Ser Thr Thr Ala Thr Ser Thr Thr Ala Thr Ser Thr
 65 70 75 80

Thr Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr Ile Ser Pro Ser
 85 90 95

Leu Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile Val Asn Leu Asn
 100 105 110

Ile Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu Gly Leu Ser Ser
 115 120 125

Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys Val Thr Pro Ala
 130 135 140

Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn Gln Leu Ile Pro
 145 150 155 160

Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr Thr Thr Lys Tyr
 165 170 175
 Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser Ser Ser Thr Ser
 180 185 190
 Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser Lys Phe Val Leu
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 Arg Asp Asp Pro Glu Phe Thr Ser Gln Leu Thr Ser Ser Phe
 210 215 220

<210> 123
 <211> 452
 <212> PRT
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 20 25 30
 Ser Leu Trp Lys Ser Lys Pro Ile Thr Thr Val Ser Thr Thr Asn Asp
 35 40 45
 Thr Ile Thr Asn Lys Tyr Thr Ser Thr Val Ile Asn Ala Asn Phe Ala
 50 55 60
 Ser Tyr Arg Glu Phe Glu Asp Arg Glu Pro Leu Thr Ile Gly Phe Glu
 65 70 75 80
 Tyr Met Ile Asp Lys Ser Gln Gln Asp Lys Leu Ser His Pro Asn Lys
 85 90 95
 Ile Asp Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn
 100 105 110
 Ala Lys Leu Pro Thr Gly Ser Val Asn Asp Ile Ser Ile Ile Thr Cys
 115 120 125
 Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Leu Ile Glu Gly
 130 135 140
 Ser Ile Cys Tyr Tyr Phe Tyr Leu Leu Asn Asn Asp Thr Asn Lys Trp
 145 150 155 160
 Asn Asn His Lys Leu Lys Tyr Asp Lys Thr Tyr Asn Glu His Thr Asp
 165 170 175
 Asn Asn Gly Ile Asn Tyr Tyr Lys Ile Asp Tyr Ser Glu Ser Thr Glu

180	185	190
Pro Thr Thr Glu Ser Thr Thr Cys Phe Cys Phe Arg Lys Lys Asn His		
195	200	205
Lys Ser Glu Arg Lys Glu Leu Glu Asn Tyr Lys Tyr Glu Gly Thr Glu		
210	215	220
Leu Ala Arg Ile His Cys Asn Lys Gly Lys Cys Val Lys Leu Gly Asp		
225	230	235
Ile Lys Ile Lys Asp Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Met		
245	250	255
Ser Val Asn Thr Pro Val Asn Phe Asp Asn Pro Thr Ser Ile Asn Leu		
260	265	270
Pro Thr Val Ser Thr Thr Asn Asp Thr Ile Thr Asn Lys Tyr Thr Gly		
275	280	285
Thr Ile Ile Asn Ala Asn Ile Val Glu Tyr Cys Glu Phe Glu Asp Glu		
290	295	300
Pro Leu Thr Ile Gly Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn		
305	310	315
Lys Leu Ser His Pro Asn Lys Ile Asp Lys Ile Lys Phe Phe Asp Tyr		
325	330	335
Ile Ile Glu Phe Asp Asp Asp Val Lys Leu Pro Thr Ile Gly Thr Val		
340	345	350
Asn Ile Ile Tyr Ile Tyr Thr Cys Glu His Asn Asn Pro Val Leu Val		
355	360	365
Glu Phe Ile Val Ser Ile Glu Glu Ser Tyr Tyr Phe Tyr Phe Tyr Ser		
370	375	380
Met Asn Asn Asp Thr Asn Lys Trp Asn Asn His Lys Ile Lys Tyr Asp		
385	390	395
Lys Arg Phe Asn Lys His Thr Asp Met Asn Gly Ile Asn Cys Tyr Glu		
405	410	415
Tyr Val Leu Arg Lys Cys Ser Ser Tyr Thr Arg Lys Asn Glu Tyr Glu		
420	425	430
His Lys Glu Leu Ala Arg Ile His Cys Asn Glu Glu Lys Cys Val Asn		
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Val Lys Val Arg		
450		

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211 <211> 732

<212> PRT

<213> Babesia microti

<400> 124

Val Pro Thr Leu Ser Ser Leu Val Lys Leu Phe Ser Glu Val Val Met Leu
5 10 15

Arg Val Lys Asp Ala Ser Ser Thr Glu Ala Thr Ile Arg Met Phe Leu
 20 25 30

Arg Phe Asn Ala Phe Ile Lys Phe Leu Asn Glu Glu Lys Ser Arg Gly
 35 40 45

Asp Lys Ser Ala Leu Asn Asp Glu Gly Leu Met Arg Phe Ile Ser Met
50 55 60

Thr Ser Gly Phe Ile Asp Asp Leu Glu Leu Val Leu Asp Glu Leu Ser
65 70 75 80

Lys His Ser Leu Leu Ile Asn Asn Glu Gly Ala Lys Ser Met Leu Ser
85 90 95

Ser Leu Ile Leu Ser Phe Arg Tyr Ile Asn His Ile Arg Asn Leu Ile
100 105 110

Asn Gly Ile Tyr Leu Gly Leu Asn Asn Pro Ser Ser Ser Ile Gly Glu
115 120 125

Thr Ala Gln Glu Thr Thr Glu Pro Ser Thr Pro Thr Pro Thr Pro Ser
 130 135 140

Thr Gln Thr Ile Leu Lys Pro Lys Gly Ser Glu Ile Arg Gly Tyr Ile
145 150 155 160

Ile Lys Val Asp Gln Thr Ala Asn Leu Ile Thr Phe Ile Asp Ala Leu
165 170 175

Ile Lys Glu Leu Asn Val His Ile Lys Gln Thr Thr Thr Ser Ser Val
180 185 190

Val Gly Thr Lys Glu Thr Asn Gly Thr Thr Ser Gly Ser Pro Glu Ser
 195 200 205

Asn Pro Gly Ser Thr Asp Ser Gly Ser Ile Gln Ala Glu Val Ala Glu
210 215 220

Leu Leu Lys Lys Phe Ala Thr Ile Ala Ser Phe Asp Glu Lys Phe Thr
225 230 235 240

Asn Leu His Ile Asn Lys Pro Phe Ala Asp Ala Leu Ile Lys Arg Leu
245 250 255

Asn Glu Ile Lys Ala Glu Leu Ser Ser Asn Ser Gly Thr Pro Pro Lys
 260 265 270
 Leu Pro Asp Ile Ser Cys Leu Arg Leu Ser Glu Ile Val Gln Lys Leu
 275 280 285
 Asn Arg Leu Ile Lys Phe Asn Thr Ser Arg Leu Ile Asn Lys Ser Phe
 290 295 300
 Pro Glu Leu Cys Lys Leu Phe Ile Lys Met Pro Asp Val Asp Ser Asn
 305 310 315 320
 Lys Phe Met Ala Leu Asp Val Asp Ile Ser Asn Thr Leu Val Asn Arg
 325 330 335
 Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser
 340 345 350
 Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser
 355 360 365
 Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln
 370 375 380
 Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile
 385 390 395 400
 Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Gln Ser Lys Leu Leu
 405 410 415
 Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala
 420 425 430
 Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala
 435 440 445
 Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val
 450 455 460
 Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr
 465 470 475 480
 Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val
 485 490 495
 Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu
 500 505 510
 Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe
 515 520 525
 Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Glu Gly Gln Gln Thr Ser
 530 535 540

Glu Gly Gln Gln Thr Ser Glu Gly Gln Gln Thr Ser Gly Asp Gln Asp
 545 550 555 560
 Thr Ser Gly Gly Gln Asp Thr Asn Glu Thr Ile Phe Ser Tyr Leu Tyr
 565 570 575
 Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln Gly Thr
 580 585 590
 Ser Ala Gln Leu Leu Glu Tyr Arg Thr Gln Leu Ala Ser Leu Ser Lys
 595 600 605
 Ile Lys Ser Leu Arg Lys Ile Lys Arg Arg Leu His Ser Tyr
 610 615 620
 Pro Thr Phe Cys Ser Leu Ser Tyr Val Pro Ser Thr Ser Val Ser
 625 630 635
 Phe Cys Arg Asn Glu Phe Leu Leu Asn Met Val Ser Phe Ser Gln Ser
 640 645 650
 Leu Phe Ile Leu Phe Pro Leu Leu Phe Ser Cys Trp Thr Glu Val
 655 660 665
 Leu Met Gly Asn Tyr Ile Tyr Pro His Tyr Phe Ser Pro Ser Ile Leu
 670 675 680 685
 Met Leu Tyr Thr Leu Phe Ile Thr Pro Arg Val Ser Pro Pro Cys Leu
 690 695 700
 Ser Pro Phe Leu Pro Thr Ser Pro Gln Pro Thr Thr His Gly Val
 705 710 715
 Asn Thr Pro Gln Lys Cys Cys Leu Pro Gly Thr Leu Ser Gly
 720 725 730
 Lys Ala

<210> 125
 <211> 334
 <212> PRT
 <213> Babesia microti

<400> 125
 Leu Ser Asn Ser Ser Ile Arg Gly Arg Val Trp Leu Ile Phe Pro Arg
 5 10 15
 Tyr Leu Leu Lys Asp Tyr Lys Met Ile Leu Val Cys Ile Cys Phe Val
 20 25 30
 Asn Ile Glu Asp Leu Gly Thr Gln Lys Asn Lys Ser Ser Pro Leu Gly
 35 40 45

Lys Ile Gly Thr Ser Met Asp Asp Ile Ile Ala Met Phe Ser Asn Pro
 50 55 60

Asn Met Tyr Leu Val Lys Val Ala Tyr Leu Gln Ala Ile Glu His Ile
 65 70 75 80

Phe Leu Ile Ser Thr Lys Tyr Asn Asp Ile Phe Asp Tyr Thr Ile Asp
 85 90 95

Phe Ser Lys Arg Glu Ala Thr Asp Ser Gly Ser Phe Thr Asp Ile Leu
 100 105 110

Leu Gly Asn Lys Val Lys Glu Ser Leu Ser Phe Ile Glu Gly Leu Ile
 115 120 125

Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly Val Thr Gly Gly Ile
 130 135 140

Ser Ser Ser Ser Leu Phe Asp Glu Ile Phe Asp Glu Leu Asn Leu Asp
 145 150 155 160

Gln Ala Thr Ile Arg Thr Leu Val Ala Pro Leu Glu Glu Ile Lys Asn
 165 170 175

Glu Leu Lys Thr Ile Ser Ser Gln Lys Ile Ala Asp Ala Thr Val Thr
 180 185 190

Pro Ser Thr Pro Asn Thr Asn Val Asn Ile Lys Thr Ile Ile Ser Lys
 195 200 205

Ile Lys Lys Ile Leu Met Ile Ser Glu Thr Ile Ser Ser Thr Ala Leu
 210 215 220

Ala Arg Leu Ser Ala Val Leu Ser Ile Leu Gly Arg Gly Thr Ser Thr
 225 230 235 240

Asn Val Ile Pro Glu Arg Leu Thr Ser Ile Val Val Asp Leu Lys Ser
 245 250 255

Ala Thr Val Pro Gln Glu Val Ala Leu Lys Asn Gly Val Tyr Lys Leu
 260 265 270

Lys Asp Gln Phe Lys Leu Thr His Lys Met Ile Pro Val Phe Gly Ser
 275 280 285

Val Gln Leu Gln Ile Pro Glu Lys Ser Thr Val Val Gln Ile Ser Val
 290 295 300 320

Val Glu His Glu Asn Asp Thr Lys Met Ala Ile Ile Thr Leu Asp Asp
 305 310 315

His Ser Lys Leu Thr Leu Glu Arg Val Ile Leu Ser Glu Thr
 325 330

<210> 126
<211> 268
<212> PRT
<213> Babesia microti

<400> 126
Lys Tyr Lys Tyr Ala Leu Glu Ser Gly Glu Pro Arg Arg Val Glu Met
5 10 15
Gly Ser Arg Phe Ser Glu Met Gly Ser Arg Phe Ser Val Ser Pro Trp
20 25 30
Ala Trp Leu Glu Cys Pro Ser Cys Leu Pro Ser Pro Leu Phe Gln Val
35 40 45
Thr Met Ser Pro Ser Gln Ser Pro Arg Trp Ser Ser Cys Pro Pro Leu
50 55 60
Ser Ser Trp Leu Leu Pro His Pro Arg His Ile Pro Ile Lys Asp Cys
65 70 75 80
Arg Leu Ser Tyr Cys Tyr Pro Cys Arg Val Leu Met Pro Leu Arg Pro
85 90 95
Gly Thr Ser Ser Ala Ser Val Pro Ser Arg Pro His Ser Ala Pro Pro
100 105 110
His Val Ala Gly Pro Pro Ser Ala Pro Arg Asp Leu Gln Tyr Ser Leu
115 120 125
Ser Arg Ser Pro Leu Ala Leu Arg Leu Arg Trp Leu Pro Pro Ala Asp
130 135 140
Ser Gly Gly Arg Ser Asp Val Thr Tyr Ser Leu Leu Cys Leu Leu Cys
145 150 155 160
Gly Arg Asp Gly Pro Ala Gly Ala Cys Gln Pro Cys Gly Pro Arg Val
165 170 175
Ala Phe Val Pro Arg Gln Ala Gly Leu Arg Glu Arg Ala Ala Thr Leu
180 185 190
Leu His Leu Arg Pro Gly Ala Arg Tyr Thr Val Arg Val Ala Ala Leu
195 200 205
Asn Gly Val Ser Gly Pro Ala Ala Ala Glu Ala Thr Tyr Ala Gln
210 215 220
Val Thr Val Ser Thr Gly Pro Gly Glu Ala Thr Arg Pro Ser Gly
225 230 235 240
Val Arg Pro Pro Pro Gln Pro Gln Phe Pro Leu Cys Ile Pro Ser His

245

250

255

Ser Gly Thr His Val Thr Thr Pro His Ala Pro Gly
 260 265

<210> 127
 <211> 386
 <212> PRT
 <213> Babesia microti

<400> 127
 Val Asn Ala Leu Ile Lys Glu Leu Asn Ala His Ile Lys Gln Arg Ala
 5 10 15

Thr Ser Thr Thr Ile Ile Glu Thr Asn Ala Lys Asp Val Asp
 20 25 30

Glu Leu Val Lys Lys Phe Ala Thr Ile Ala Ser Phe Asp Asp Lys Phe
 35 40 45

Lys Asn Val Phe Phe Asp Asn Ser Val Ile Asp Glu Ile Val Lys Thr
 50 55 60

Leu Glu Lys Met Lys Val Glu Ser Asp Thr Val Leu Pro Ser Cys Asn
 65 70 75 80

Gly Ile Gln Thr Thr Glu Asn Ser Ser Thr Asp Pro Tyr Thr Val Leu
 85 90 95

Ser Lys Leu Ile Lys Lys Ile Asn Asp Ser Ile Ile Arg Pro Met Thr
 100 105 110

Ser Arg Leu Ile Asn Lys Ser Phe Pro Glu Leu Cys Lys Leu Phe Ile
 115 120 125

Lys Met Pro Asp Val Asp Ser Asn Lys Phe Met Ala Leu Asp Val Asp
 130 135 140

Ile Ser Asn Thr Leu Val Asn Arg Arg Val Arg Tyr Ser Asp Gly Arg
 145 150 155 160

Phe Thr Ile Val Ser Thr Gly Ser Asn Phe Arg Tyr Thr Leu Ala Pro
 165 170 175

Thr Ala Ala Gly His Asp Leu Ser Leu Phe Ser Gln Leu Pro Ile Ser
 180 185 190

Met Ile Thr Val Thr Ser Pro Gln Glu Gln Ala Leu Thr Ser Cys Val
 195 200 205

Ser His Gly Asn Glu Phe Ser Ile Val Ser Thr Ala Gly Lys Thr Thr
 210 215 220

Tyr Thr Thr Gln Ser Lys Leu Leu Ser Leu Phe Lys Leu Ser Ala Glu
 225 230 235 240
 Thr Leu Arg Asp Phe Asn Glu Ala Arg Phe Ala Leu Gly Asn Met Thr
 245 250 255
 Asp Ser Ala Asn Lys Ser Lys Ala Leu Glu Val Tyr Lys Ser Thr Leu
 260 265 270
 Thr Thr Met Lys Ser Ile Ser Val Glu Leu Glu Lys Ile Phe Gly Ile
 275 280 285
 Leu Lys Ser Thr Pro Asn Ile Thr Phe Glu Ser Val Val Ser Lys Tyr
 290 295 300
 Lys Leu Thr Gly Val Asn Thr Val Asp Thr Ala Asn Ala Asp Val Ile
 305 310 315 320
 Asn Glu Thr Met Phe Asp Asp Leu Ser Lys Ala Ile Ser Ser Tyr Leu
 325 330 335
 Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln Gly
 340 345 350
 Thr Ser Glu Gly Gln Gln Thr Ser Gly Gly Gln Asp Thr Asn Glu Thr
 355 360 365
 Ile Phe Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp
 370 375 380
 Ile Lys
 385

<210> 128
 <211> 1371
 <212> DNA
 <213> Babesia microti

<400> 128
 acataaacact agggacttgg cattgcataat ctgtaaatat aattgaaaacc aaaataaaaat 60
 attggtgagt tccataggtt gggttgttca cagtgcacatt taaaagtgaa attcttgaga 120
 gctggtttgg aggttctatt aggggagtgcc ggtacttgtta taccttggac tgaagaccag 180
 tcctcctcta ttccggaaag gtcgtcctct tcgaccaagc atgcagcttc aggatggaca 240
 cacatggagt gttggggggag gaaagagatc cccctaagcc agatagatca actaaatgaa 300
 ccttggaaat aaatggggtg acagatgttag cagcgagatt gccctcacat actgaaaatgt 360
 aaataattaa ccaccattag ttttccatct gataacctgg cactctctaa tttaattcaa 420
 cattctgaaa agtgctttg aaagattgggt ggcaaccacc tattatccct ccaatgggta 480
 ggc当地 ggtgaatcga agtatgttgtt agggaggcta gtcttaatat agggttcaac 540
 tacagggaaag acttcatgtt aagatgttat ttcatataaa aaagaaaatgt gtgtttttta 600
 tctgacttct tattgtggca ccatagagca ttgaaaagca ccgtatgttggta 660
 tcagatcaca ttatcccac agttgaaagg cattataaaa caggttttgt tgacactaga 720
 cttaatccc agcattggg aaacagagggc aggtggatct tggagattcg tgcttagcctg 780
 gtctacagtggagtttgg gtagtggggatttcaatgaaaccatgt ccctggggta 840

aggggaagga agaaaaaaag ataatgtagt atgatacagg ataaaattta atagcatctt 900
 tttaagaatt atgagaacac tctctgtcac tgggttctat ggattcagt tattgtttaa 960
 ctgtgggtgt ttagctctgc ttctatcagt cactggatga aggtactaga atggcatata 1020
 acactggaac acttaacagc ttacttgagg ctagtaagt aagcacatga tgacaggtat 1080
 ggaggggttg tgcagaatgg aactaagttc tagagaattt gcagaaatgg tcattatagg 1140
 acactgggtg aaagggtgcct ctctgtacac ttccctaaagc tctgtccgtt gcttgataa 1200
 tatgtgatct cttggacagt gatgtacctg accttccctc tgcattctgtt ctcttcctcc 1260
 ttcccttccc ctccccctcg cttccctcc tctgcctcc cctctttctt attcccttct 1320
 ctccctctctc attcattcccc cttgctcttc tctcccttctt tctctttctt t 1371

<210> 129

<211> 2417

<212> DNA

<213> Babesia microti

<400> 129

attttgtact gttcaaatgt gtaatatatt tgtgaaagaa gaaaataatt taagtcaaga 60
 ggatgatgaa agggcagaag taatacttga gataagcact tcacatctt caattaaaac 120
 tcttctgtgt ctacctgcaa attcatgaca gatgaaatta acttgtttt tattcggtt 180
 ctccctttat ttctgccagt attataattt caggaaggaa catgcatcat aaattacatg 240
 taactttcat gttcagttga tgctgtttt tattttgtat ctcatgttgc agcagtaaag 300
 tcatacaaaa aataataaat acctctcatg gagctgcca ttccctctgc atctttttt 360
 gggagaagaat ggcctgaaga gtagagcgtt aagactcaca aagtcaagaa ctttcagata 420
 gaacccagcc atcaatttgc gccacaatgg gtgctgaatc caacttcttg atttgtttt 480
 aaaggatatta ggaataataat tgattagcac ttgtcagggtt cacaatccag gacctaatac 540
 aagacacacc tcaggtgaat ttctgagaga ttatccatat tagttaattt aggaggaaa 600
 ctctacctta attgtccatg ggaccagttc aacagctaga gtactgaact gcataaaaag 660
 gagaaagtga cctggcagg aacatgacca ttctcttgcg cctcgctgca gaagaaatgt 720
 gatcagccctc tttaaagtcc tgtagcagtg actccatgc cacaatgaac tgtagccat 780
 ttcatcatac tgccttagct tcctttctct ctttataata ctttgcgtt atgtgacca 840
 attctgaacc ctcaagtccac caagaaaacc attccaaggc aaaagcaaac agacttgtat 900
 tatttaacaa gttaatgcca tctactccgg tccttcatac gttcatcatg gtgggtggaa 960
 tgagaaggac cccaatgggc catgaggcag ggaatttattt gggcacagca aggggagtgt 1020
 cttagggtcat tgtagctga ctcagagtgc agtgcatttgc ctcgaatccct gagcgcattt 1080
 attcggctct taaggttagcc aaccatgcct gggggactgt tcctgcattca atagcagtaa 1140
 aggccgaaca atcatggctg cattgtgact ttgtgtgact ctaatcttac atagaagagt 1200
 aattcagagc cccgttgc ttctctggcc cctgcgtgt ggagggtgcc gacgtgatcc 1260
 agagccatga gacaccctgt ccatcatccg tcccctcccg cgccacgcct tcttcatgcc 1320
 tcgccttatgg ttctctgtg tggtcgcaaa cgtttaaaaa cacgagcaac aagcaacacc 1380
 ttctgaaaat taacagcaag gttttcttaa gaattccca agtgcaggct ggagagaggg 1440
 cccagaggtt aagagactg gctgctttc cagagtcct gagttcaattt cccagcaccc 1500
 acagggtggc tcacaaccat ctgtaatgag atcgctgcct ctcttcgtgc ccgcaggcag 1560
 aacactgtat atataataag taaataaaatc ttctttaaa aaagagtgag gtactgaagc 1620
 aacccctatac caccgtgtt caatatgtga tttaaaaaaa aagaattaac taagtgcagg 1680
 atactgtggc cattgtctgc ccctggagg tcctgtgcc cagggaaatg ctgcgtgctc 1740
 ctgtctccag gccatgcaga gggctgaatc cccctgcgc ccccccacacg cacaacatata 1800
 actcgtttg tctccctctgc agaatctaga ttccacatac atattacacg caagcagaaa 1860
 gtgaccgtt agagaaatttgc ttcttcttattttaattt taagggagat tgactacatc 1920
 aatgaattaa gaactgatac atcaatatttgc aattctggaa gatgaactgg ggagaatgt 1980
 ccatgtggaa attgttcacc atataaccat ggggatatgg gctcagccctc agtactcttgc 2040
 tagcaaactg gacacagcag cacaccccttgc gccctgcac aggacatgca aagacagaat 2100
 gatgataccca gtggcttgg ggccagccaa gtctacccca ttaaggaaactg actaaccatc 2160
 ggtaaccagg aactcaggtt cagttacctgc ctgtgcattt ataaaacttta cttcttagttt 2220
 agatttccat ttatgttttca attattccag atattctgtt ttgtatctat ctgcttatga 2280

tttatatttc ctaaattctc aacttgtaaa tggcattaga aggatggaat tgtacagttt 2340
 cactttgtaa ttgttaagtc ctatgcgtg ttttgcatg ttttgaagt gttttcagta 2400
 agtatttact tatttat 2417

<210> 130
 <211> 1333
 <212> DNA
 <213> Babesia microti

<400> 130
 aggtcacaca tagaggagtg tggcaatta aacactcaag caccctatgt cttgggttgc 60
 tctctattgc tgtgataaac accagagcta agcccaactt gaagttgtca catggctcc 120
 acacacaatac acacacacac acacacacac acacacctat gtatgcacat gcaaccccac 180
 acacatacaa aaaaaaaaaaaga acctctactc tttAACAGCA ataaaaaaaaatg aactaaggta 240
 aaagaaaaacc aaccttgctt catcatttag tcatagaaaa tgatactgtg gttgtcattt 300
 actatcatta acctaaaaata aatgtgtccc tacctaaggg tataaactgt tatctggct 360
 tgtacagatt ttggatcttg aattctttta gtgggttgc caatagcatt ttaaggtccc 420
 agaataaaata gacaggatga aatgggatgg gctagagtag aatggaggct aatatcagaa 480
 caaatcagac agtgaggata tacttggctt tacaagaatc ctatttacac acacatgcac 540
 atgtactgtc agtatgtact gctacatcaa caacatctgc tacatcaaca acagctacca 600
 catcaacaac aactgccaca tcaacaacaa ctgccacatc aacaacagct accacatcaa 660
 caacagctgc cacatcaaca atttctccgt ctctggagac cacacaagat gttgtgtca 720
 caaatattgt gaatcttaac ataaacgaaa taggatttg ttagtcaagtt ccagagggtc 780
 ttcttcttag ttacgtttt tctactgtat gaatcttac caaagttacc ccagctacag 840
 ggtttcaat tgggtgtta atatttggca atcaattaat tccacagtcc atggatgtta 900
 tcactaggac cggttcatac accactaaat atccttgcatt tggtgttagg attcaagata 960
 agacttcgag ttctacttca accgtttact atgagcaatc tggtttacaa tctagcaa 1020
 ttgtttgtag ggatgaccca gaatttattttt ttcctcaaaa tgcgtatgt acttatacag 1080
 tcaatgacat aacatataaa tcatttgata tttctagtgc cgatgataac gaattttaa 1140
 aaatatcatt aagtgtatgg agcatgttgc acaccaataa tccagattcc aaaatttaca 1200
 tcagcgaagt taaggttggt gagataacaa tccaataaa tataacatca caatatacac 1260
 tgatcaaatt atcatttaat ggtgaatttg ttgagttgtt tactacagga tgtttgcgtg 1320
 aacataatataa 1333

<210> 131
 <211> 537
 <212> DNA
 <213> Babesia microti

<400> 131
 ttatggaggg ctatttagat ctgcatttgaa attccaagat tggtaacttt atttcagcc 60
 tcgaactcac taacctgacc aacacggtaa aatcagcgag cgtccaccct ccccaactaa 120
 aagtgttggc tctgaagttt ggcaacaaga tcgttgcattt cgaggagaca ggcaggacat 180
 ttgttacatt tgatgagaag ttgaattcaa tagaaataat taccttcgaa aatgtatggca 240
 ctatgacatc aaaattttat tccagggtt cccttagactc aacaacctac attggacatg 300
 cctctacgtc cacacccccc gaagtgcattt ccagggtt atgtggtaaa gaggacttat 360
 gtacgctgtc cattacggat ctattgttgc aagagattag tgctaaagaaa ttggaggagt 420
 gtaggaagaaa gaatgcattt agtggactc catctggtgg tacaccttct aatgttccag 480
 aggagtgtgt aattagaacc aacttacaga tggttatgaa gaagaatgct cgtcccg 537

<210> 132
 <211> 178
 <212> PRT
 <213> Babesia microti

<400> 132
 Met Glu Gly Tyr Leu Asp Leu Asp Leu Asn Ser Lys Ile Gly Asn Phe
 5 10 15
 Ile Ser Ala Ile Glu Leu Thr Asn Leu Thr Asn Thr Val Lys Ser Ala
 20 25 30
 Ser Val His Pro Pro Gln Leu Lys Val Leu Ala Leu Lys Phe Gly Asn
 35 40 45
 Lys Ile Val Asp Val Glu Glu Thr Gly Arg Thr Phe Val Thr Phe Asp
 50 55 60
 Glu Lys Leu Asn Ser Ile Glu Ile Ile Thr Phe Glu Asn Asp Gly Thr
 65 70 80
 Met Thr Ser Lys Phe Tyr Ser Arg Glu Ser Leu Asp Ser Thr Thr Tyr
 85 90 95
 Ile Gly His Ala Ser Thr Tyr Thr Leu Pro Glu Val Leu Thr Arg Ser
 100 105 110
 Leu Cys Gly Lys Glu Asp Leu Cys Thr Leu Asp Ile Thr Asp Leu Leu
 115 120 125
 Leu Lys Glu Ile Ser Ala Lys Lys Leu Glu Glu Cys Arg Lys Lys Asn
 130 135 140
 Ala Ser Ser Gly Thr Pro Ser Gly Gly Thr Pro Ser Asn Val Pro Glu
 145 150 155 160
 Glu Cys Val Ile Arg Thr Asn Leu Gln Met Val Met Lys Lys Asn Ala
 165 170 175
 Arg Ala

<210> 133
<211> 292
<212> PRT
<213> Babesia microti
<400> 133
 Ser Arg Met Glu Ala Asn Ile Arg Thr Asn Gln Thr Val Arg Ile Tyr
 5 10 15
 Leu Ala Leu Gln Glu Ser Tyr Leu His Thr His Ala His Val Leu Ser
 20 25 30
 Val Cys Thr Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr Thr Ala Thr
 35 40 45

Thr	Ser	Thr	Thr	Thr	Ala	Thr	Ser	Thr	Thr	Thr	Ala	Thr	Ser	Thr	Thr
50					55						60				
Ala	Thr	Thr	Ser	Thr	Thr	Ala	Ala	Thr	Ser	Thr	Ile	Ser	Pro	Ser	Leu
65					70						75				80
Glu	Thr	Thr	Gln	Asp	Val	Ala	Val	Thr	Asn	Ile	Val	Asn	Leu	Asn	Ile
			85						90				95		
Asn	Glu	Ile	Gly	Phe	Val	Asp	Gln	Val	Pro	Glu	Gly	Leu	Ser	Ser	Ser
					100				105				110		
Tyr	Val	Phe	Ser	Thr	Asp	Gly	Ile	Phe	Thr	Lys	Val	Thr	Pro	Ala	Thr
					115				120				125		
Gly	Phe	Ser	Ile	Gly	Cys	Val	Ile	Phe	Gly	Asn	Gln	Leu	Ile	Pro	Gln
			130			135				140					
Ser	Met	Asp	Val	Ile	Thr	Arg	Thr	Val	Ser	Tyr	Thr	Thr	Lys	Tyr	Pro
145					150					155				160	
Leu	Ile	Val	Val	Arg	Ile	Gln	Asp	Lys	Thr	Ser	Ser	Ser	Thr	Ser	Thr
					165				170				175		
Val	Tyr	Tyr	Glu	Gln	Ser	Gly	Leu	Gln	Ser	Ser	Lys	Phe	Val	Leu	Arg
					180				185				190		
Asp	Asp	Pro	Glu	Phe	Ile	Ile	Pro	Gln	Asn	Arg	Ser	Ser	Thr	Tyr	Thr
					195				200				205		
Val	Asn	Asp	Ile	Thr	Tyr	Lys	Ser	Phe	Asp	Ile	Ser	Ser	Ala	Asp	Asp
					210				215				220		
Asn	Glu	Phe	Leu	Lys	Ile	Ser	Leu	Ser	Asp	Gly	Ser	Met	Leu	Tyr	Thr
					225				230				235		240
Asn	Asn	Pro	Asp	Ser	Lys	Ile	Tyr	Ile	Ser	Glu	Val	Lys	Val	Gly	Glu
					245				250				255		
Ile	Thr	Ile	Pro	Ile	Asn	Ile	Thr	Ser	Gln	Tyr	Thr	Leu	Ile	Lys	Leu
					260				265				270		
Ser	Phe	Asn	Gly	Glu	Leu	Val	Glu	Leu	Tyr	Thr	Gly	Cys	Phe	Gly	
					275				280				285		
Glu	His	Asn	Ile												
			290												

<210> 134

<211> 215

<212> PRT

<213> Babesia microti

<400> 134

Val	Gln	Thr	Phe	Glu	Asn	Asp	Gly	Thr	Met	Thr	Ser	Lys	Phe	Tyr	Ser
									5						15

Arg	Glu	Ser	Leu	Asp	Pro	Thr	Thr	Tyr	Ile	Gly	His	Ala	Pro	Thr	Asp
									20						30

Ile	Phe	Thr	Ser	Pro	Trp	Ile	Thr	Thr	His	Met	His	Asn	Lys	Arg	Leu
									35						45

Val	Asp	Phe	Glu	Val	Pro	Phe	Glu	Ala	Ile	Phe	Asp	Asp	Lys	Leu	Ile
									50						60

Ser	Tyr	Tyr	Thr	Gly	Thr	Asp	Val	Asn	Gly	Lys	Asn	Lys	Val	Pro	Ala
									65						80

Glu	Leu	Thr	Lys	Ala	Ile	Cys	Gly	Lys	Glu	Asp	Val	Cys	Glu	Leu	Asn
									85						95

Ile	Thr	Gly	Leu	Leu	Leu	Lys	Asp	Ile	Ser	Ala	Lys	Lys	Leu	Glu	Glu
									100						110

Cys	Arg	Lys	Lys	Asn	Ala	Ser	Ser	Gly	Thr	Pro	Ser	Gly	Gly	Thr	Pro
									115						125

Ser	Asn	Val	Pro	Glu	Glu	Cys	Val	Ile	Lys	Ser	Asn	Leu	Gln	Thr	Val
									130						140

Met	Lys	Lys	Asp	Val	Thr	Thr	Leu	Lys	Ser	Asp	Asp	Val	Ser	Asn	
									145						160

Tyr	Ser	Val	Val	Ser	Ile	His	Phe	Tyr	Ile	Asp	Asn	Val	Phe	Arg	His
									165						175

Asn	Thr	Ala	Phe	Gly	Arg	Ile	Lys	Ile	Gly	Asn	Leu	Asp	Leu	Pro	Ala
									180						190

Phe	Ser	Ile	Gly	Phe	Ile	His	Ser	Ile	Phe	Val	Glu	Arg	Val	Leu	Met
									195						205

Gly	Asp	Lys	Ser	Leu	Ala	Ser
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<211> 2560

<212> DNA

<213> Babesia microti

<400> 135

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accagtatta gtcatcaagt tgacgataat cgtattgaat attatgaaac cttttgtat 180

gggccttc ccccttataa tacagaatat ggtaaacaaa aatgttagtga gcaaaaatgaa 240
gtaaaagtgt atagtattaa ggataagaat ttggaaattt atgtaaaata attaatgaa 300
gtataatatt attaaaata attcgaaatt taagaaatta atataattaa ttattataaa 360
aataaagtta tttatatcta aatttataat aatcaaattt ttatTTTaca tatggatcta 420
tattgtgtga tgaaacaatg gattattaag ggaatcatac cattgtcagt taaaagtgtat 480
attggtaaca atattacaaa tatatccaat gatactttt tattaataag catctatact 540
tgcaatcatt ataaactgga gatacgtta tattaacatt gtatttagaa taaggataaa 600
cacaatgtat atgccataat aaaagtaaag tcaaatgact agtatattat acaacgataa 660
agtaataataa taaaatatac taatataatct atgttatata aaatatgtct atactatagt 720
atttattat gtgatatagt catatattt tagaaataat tagtattatt tatgttatca 780
tacaatattt atoattatca aatcttactg ttatattatt attattatag agcaattttt 840
atacaatata caataaaaatt aagcgataaaa ccataaaacat cacgtatgca ggcaaataaaa 900
gacaaaattt tttgacccttataataat taactatgtt attacataat aatcaacaag 960
aatataacgt ctatcaattt ataacttggaa cttatattta ttatctgaag attaattcaa 1020
agtatttcat tattacaacg ttattataac tataataaaac atatataattt atcaataaca 1080
attgtggata aggatgaagt cagtttagacc aatactaatt cattttatta cattctttt 1140
aacaagtggaa aatgtctttg cagggaaatgg tgatgttaat caatattcaa gtgattttgg 1200
acgagcatta aacgatctta tgatcgctt taacgaggct aaaaaaaatgt atgcaaaattt 1260
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agcagatgag aagaatggtg gtcataaaaa ttaccttggaa aagaaagaaa ttgagctcaa 1380
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taaaaatgaa ataattaaac tgcttaatga tatatccact atctctaccg atattaagtcc 1500
aattgttgat gaaatataact ataaggctct tggtacaattt gaaggtgaaa atgctgaaaa 1560
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tttaaatgaa gtgaatggtg caattgaaga attaataaa actattgacg tcatgaataa 1860
caccattggg gaccttggta ttgttattga cagcggattt atttcaagca taaaatcaca 1920
tatttccaca atcgccaaatg ttctaaagc aataatccct ggacaaaatgg cattagttt 1980
tactgcattt atattaaattc taaaattttt gaaattcaga tgtatattt attatatagt 2040
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gagatataaa tgaaataaa taaaagtaac atgagaaaaga tgaatataat attaaaatatt 2160
taaatttttac tgaaataaa taaaataaa gatgttattt tgaatataatt tataataat 2220
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agtatataat tataataatgtt tttataaaaa tgacattat tttggatattt atttgcattt tgataattat 2460
atatgtaaaa atatgtattt aaatctgaaa tggcttataa tttggatattt atttgcattt tgataattat 2520
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<210> 136
<211> 309
<212> PRT
<213> Babesia microti

<400> 136
Gln Leu Trp Ile Arg Met Lys Ser Val Arg Pro Ile Leu Ile His Phe
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20 25 30

Val Asn Glu Tyr Ser Ser Asp Phe Gly Arg Ala Leu Asn Asp Leu Met

35	40	45
Ile Ala Phe Asn Glu Ala Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln		
50	55	60
Ile Thr Asp Thr Met Phe His Thr Tyr Lys Asn Ser Ile Asp Ile Leu		
65	70	75
Lys Ala Asp Glu Lys Asn Gly Gly His Lys Asn Tyr Leu Glu Lys Lys		
85	90	95
Glu Ile Glu Leu Lys Ser Lys Thr Val Glu Phe Asp Val Ile Phe Ser		
100	105	110
Asn Ile Asp Leu Asn Asn Ser Thr Val Lys Asn Glu Ile Ile Lys Leu		
115	120	125
Leu Asn Asp Ile Ser Thr Ile Ser Thr Asp Ile Lys Ser Ile Val Asp		
130	135	140
Glu Ile Tyr Tyr Lys Ala Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu		
145	150	155
Asn Phe Glu Tyr Glu Ile Lys Lys Lys Ala Glu Leu Leu Arg Asn		
165	170	175
Leu Leu Asn Asp Asn Ile Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile		
180	185	190
Tyr Asn Met His Ile Pro Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp		
195	200	205
Ile Lys Lys Ala Phe Glu Lys His Glu Leu Glu Ala Asn Val Leu Ile		
210	215	220
Ser Lys Ile Leu Glu Asn Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp		
225	230	235
Ile Leu Asn Glu Val Asn Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile		
245	250	255
Asp Val Met Asn Asn Thr Ile Gly Asp Leu Gly Ile Val Ile Asp Ser		
260	265	270
Gly Ile Ile Ser Ser Ile Lys Ser His Ile Ser Thr Ile Ala Lys Ile		
275	280	285
Ser Lys Ala Ile Ile Pro Gly Gln Met Ala Leu Val Phe Thr Ala Leu		
290	295	300
Ile Leu Ile Leu Asn		
305		

<210> 137	
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<212> DNA	
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<223> PCR primer	
<400> 138	24
agcttagaac cggagccacc agag	
<210> 139	
<211> 29	
<212> DNA	
<213> Artificial Sequence	
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<223> PCR primer	
<400> 139	29
attccagaac ccaatgcgga ttcaagaatc	
<210> 140	
<211> 37	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> PCR primer	
<400> 140	37
cttgaattca tagaatccca ggaaaggcctt aaacatg	
<210> 141	
<211> 31	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> PCR primer	
<400> 141	31
cgcgcgtaga attctcaatt tacaataaat g	

<210> 142
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 142
ggttctaaac ttacagatga tattaagaag gc

32

<210> 143
<211> 2034
<212> DNA
<213> Babesia

<400> 143

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gaacaaatgg attctgatac cagggtgtt cccgaaagtt tggatgaggg ggtaccacac 180
caattctcta gattaggca ccactcagac atggcatctg atataaatga tgaagaacca 240
tcatttaaaa tcggcgagaa tgacataatt caaccaccct gggaaagatac agctccatac 300
cattcaatacg atgatgaaga gtttgacaac ttaatgagac taacggcgca agaaacaagt 360
gacgatcatg aagaaggaa tggcaaactc aatacgaata aaagtggagaa gactgaaaaga 420
aaatcgcatg atactcagac accgcaagaa atatatgaag agcttgaccaa cttactgaga 480
ctaacggcac aagaaatata tgaagagcgt aaagaaggc atggcaaacc caatacgaat 540
aaaagtggaa aggctgaaag aaaatcgcat gatactcaga caacgcaga aatatgtgaa 600
gagtgtgaag aagggcatga caaaatcaat aagaataaaa gtggaaatgc tggaaataaaa 660
tcgttatgata ctcagacaac gcaagaataa tgtgaagagt gtgaagaagg gcatgacaaa 720
atcaataaga ataaaatgg aaatgctgga ataaaatcgat atgatactca gacaccgcag 780
gaaacaagtgc acgctcatga agaaggcat gacaaaatca atacgaataa aagtggagaag 840
gctgaaagaa aatcgcatga tactcagaca acgcaagaaa tatgtgaaga gtgtgaagaa 900
ggccatgaca aaatcaataa gaataaaaatg ggaaatgctg gaataaaaatc gtatgatact 960
cagacaccgc aggaaacaag tgacgctcat gaagaagagc atggcaatct caataagaat 1020
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tcgtcgccctg atgatgatgg tggctgcgaa tgcggcatga cgaatcactt tgtcttgac 1200
tacaagacaa cactttgtt aaagagcctc aagactgaaa catccactca ttattacatt 1260
gccatggctg caattttac tatttcattt ttcctatgc tggtaaggc tttcctggaa 1320
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gaaggtgctg gtatgtataa agctggaaact gggaaacttagtg gaaactactac gttatgtggaa 1920
actggctgtg gtggagctgg tagtggatgg cctatgtggac atgcttctaa tgcaaaaattt 1980
cctggataaa tgacactaac tctatgttgc ttatgtataa ttgttgc 2034

<210> 144
<211> 677
<212> PRT
<213> Babesia

<400> 144
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Glu Ser Val His Val Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln
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Asp Ala Cys Asp Ser Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg
35 40 45
Val Leu Pro Glu Ser Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg
50 55 60
Leu Gly His His Ser Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro
65 70 75 80
Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu Asp
85 90 95
Thr Ala Pro Tyr His Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met
100 105 110
Arg Leu Thr Ala Gln Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly
115 120 125
Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp
130 135 140
Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg
145 150 155 160
Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys
165 170 175
Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr
180 185 190
Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys
195 200 205
Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr
210 215 220
Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys
225 230 235 240
Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr
245 250 255

Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Gly His Asp Lys
 260 265 270
 Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr
 275 280 285
 Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys
 290 295 300
 Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr
 305 310 315 320
 Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Glu His Gly Asn
 325 330 335
 Leu Asn Lys Asn Lys Ser Gly Lys Ala Gly Ile Lys Ser His Asn Thr
 340 345 350
 Gln Thr Pro Leu Lys Lys Lys Asp Phe Cys Lys Glu Gly Cys His Gly
 355 360 365
 Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp
 370 375 380
 Asp Asp Gly Gly Cys Glu Cys Gly Met Thr Asn His Phe Val Phe Asp
 385 390 395 400
 Tyr Lys Thr Thr Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr
 405 410 415
 His Tyr Tyr Ile Ala Met Ala Ala Ile Phe Thr Ile Ser Leu Phe Pro
 420 425 430
 Cys Met Phe Lys Ala Phe Leu Gly Ser Ser Gly Gly Ser Gly Ser Lys
 435 440 445
 Leu Thr Asp Asp Ile Lys Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala
 450 455 460
 Ile Ile Leu Lys Lys Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile
 465 470 475 480
 Asn Phe Arg Glu Met Val Asn Glu Val Thr Cys Ala Asn Thr Lys Phe
 485 490 495
 Glu Ala Leu Asn Asp Leu Ile Ile Ser Asp Cys Glu Lys Lys Gly Ile
 500 505 510
 Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys Leu Leu Ser Thr
 515 520 525
 Ile Thr Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val
 530 535 540

Ser Ala Thr Ser Asn Gly Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr
 545 550 555 560

Gly Thr Ser Val Ser Ala Thr Ser Thr Leu Thr Gly Asn Gly Gly Thr
 565 570 575

Glu Ser Gly Gly Thr Ala Gly Thr Thr Ser Ser Gly Thr Glu Ala
 580 585 590

Gly Gly Thr Ser Gly Thr Thr Ser Ser Gly Ala Ala Ser Gly Lys
 595 600 605

Ala Gly Thr Gly Thr Ala Gly Thr Thr Ser Ser Glu Gly Ala Gly
 610 615 620

Ser Asp Lys Ala Gly Thr Gly Thr Ser Gly Thr Thr Ser Ser Gly
 625 630 635 640

Thr Gly Ala Gly Gly Ala Gly Ser Gly Gly Pro Ser Gly His Ala Ser
 645 650 655

Asn Ala Lys Ile Pro Gly Ile Met Thr Leu Thr Leu Phe Ala Leu Leu
 660 665 670

Thr Phe Ile Val Asn
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 <213> Artificial Sequence

<220>
 <223> Primer

<400> 145
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<210> 146
 <211> 30
 <212> DNA
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<220>
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<400> 146
 cataactcga gtcataatg aactttcagg 30

<210> 147
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<220>		
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gatgttatca ctaggaccgt ttcatacaccc		30
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ccccctcgagg tcgacggtat cgataagc		28
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cattttatta cattctttt aacaagtgg		
<210> 154		
<211> 37		
<212> DNA		
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<220>		
<223> Primer		
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ccgagaattc attaatttag aattaatatt aatgcag		
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<211> 27		
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<223> Primer		
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cgcctcactc tgactttggc aacaaac		
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<211> 36		
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<400> 156		36
cttgtagaat tcactagaaa gaacttgtt gttggg		
<210> 157		
<211> 30		
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<213> Artificial Sequence

<220>

<223> Primer

<400> 157

gagggttatt tagatctcga tttgaattcc

30

<210> 158

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 158

caatactcga gttatcaggc acgagcattc

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<210> 159

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 159

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39

<210> 160

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 160

ccaatagaat tcataaacct ggggcatggg gtgttag

36

<210> 161

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 161

cgcctcactc tgactttggc aacaaac

27

<210> 162

<211> 36

<212> DNA
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<220>
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<400> 162
 cttgtagaat tcactagaaa gaacttgtta gttggg

36

<210> 163
 <211> 1906
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 <213> Babesia microti

<400> 163
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 gccgatgcc aagtaacccc ttctacccccc aataccaatg tgaacatcaa aacaattatc 180
 agcaagatta agaaaatttt gatgataagt gagactattt catccacagc tcttgcacgt 240
 ttatctgcag tattaagcat tcttggtagg gggacttcca caaatgtcat tccggaacgt 300
 ctaactagta tcgttggta tttgaaatcg gcaactgttc cacaggaagt ggcgcctaag 360
 aatggagttt acaagttgaa ggaccaattt aagctaacgc acaagatgt acctgtttt 420
 ggcagcgtgc aactgcagat tccagagaaa tcaacagtgc tgtagataag ttagtagag 480
 catgaaaatg ataccaaat ggcacatcacc accettgatg atcattcgaa attgacttt 540
 gaaagggtga ttctttcaga aaccctact gttgtgggtt taaccccacac cacacaagat 600
 ccactggatg tattgcatac aatatttgta aagatggata atacaacgga ttaggggtt 660
 atggagggtt atttagatct cgatttgaat tccaagattt gtaactttat ttcggccatc 720
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 ttggaggagt gtaggaagaa gaatgcattt agtggactc catctgggt tacacccct 1260
 aatgttccag aggaggtgtt gattaaaagg aacttacaga cggttatgaa gaaggatgtt 1320
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 ctaccagcat tttccattgg gtttatccat tcgatcttcg tggaggggt tctcatgggt 1500
 gacaagagcc ttgcccgtgt tggcattata actaactacg gtccaaatgg agactatgag 1560
 ttgttggatg acatgcattt tgaggaagg aagaattttt taaaactcgtt acagggggcca 1620
 gaaataacag ctgatttat tggatctggg ttgactaaac acaagaggctt gaccatgtt 1680
 ggcgcctcca ccggttcaat tggatttggaa accaactaca aggaatcgat actcttcaat 1740
 gagtttatgc gtccaaacca caagatagtc acccttttctt atacggatag tggaaactgtc 1800
 aatcttatca agctgcactt attggagaat taaaactcgtt gtgttacttta ttcaattttac 1860
 ggtgccttcc caatttgaaga atcatcttcc gaaagttcat tggatgtt 1906

<210> 164
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 <212> DNA
 <213> Babesia microti

<210> 165

<211> 1248

<212> DNA

<213> Babesia microti

<400> 165

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gagttagtga aaaaatttgc aacaattgca tcttttgatg ataaggtaa gaacgttattc 180
tttgataatt ctgttattga tgaaattgtc aaaacgttg aaaaagatgaa ggttgagtca 240
gatactgtat taccttagttt caatggaatc cagaccactg aaaactctag tactgaccca 300
tatacagttat tatcaaaaact tataaaagaaa attaacgact ccataatcag acctatgact 360
tctcggttgc tcaacaaatc ctttccggag ttgtgcaagt tgtttataaa aatgcccgtat 420
gtcgactcca acaaatttat ggctttggat gtggacataa gcaacactct tgtaaacagg 480
agagtcagat attctgtatgg cagatttacc attgttaagca ctgggtccaa ttttagatac 540
acattggcac caactgccgc tggtcatgt ttgtctctct tctcccaatt gccaatctca 600
atgattacgg tcacatcgcc tcaggagcag gcacttacat ctggcgtcag tcatggtaac 660
gaattcagca tagtaagcac tgcaggcaag acaacttaca ctacacaatc taagttgttg 720
tcactttca agttatctgc ggagacgtt aaggattttt atgaagcttag atttgcactt 780
ggttaacatga ctgatagtgca taataaatct aaagctttgg aggttacaa atcgacacta 840
actactatga aatcaatatac agtgcatttgc gaaaagattt ttggcatatt aaaatcaact 900
ccgaatatta ctttgaatc agttgttct aaatacaaaat tgactggtgt taatacagg 960
gatactgcca atgctgtatgt gatcaacgag acaatgtttt acgatttgatc caaggcaatt 1020
tcctcataacc tataactccct catatctata atttttccgg aggatattaa aggtcaaggt 1080
acaagtgttgc gtcacaaac aagtggaggt caggatataa atgagacaat tttctcatac 1140
ctatactccc tcataatctat aattttccgg gaggatattaa aagggtgccga attcgatatc 1200
aagcttatcg ataccgtcqa cctcgtqac caccaccacc accactga 1248

<210> 166

<211> 1842

<212> DNA

<213> Babesia microti

<400> 166

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atgcagcatc accaccatca ccacctgaga gtgaaggatg cgtttccac agaggctacc 60
atacgcatgt tcctccgtt caacgcattt ataaaatttt tgaatgagga gaaatccaga 120
ggtgacaaaaa gtgcgttgaa tgatgaggga ttgatgaggt ttatatcgat gaccagtgg 180
tttatcgatg accttgaatt agtttagat gagttatcca agcacagttt gtttataaat 240
aacgaaggtg ccaagagcat gctatcctct ctctactaa gcttccgtta tattaatcac 300
ataagaattt tcatcaatgg tatttacctt ggattgaata acccatcatc gtccattgg 360

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gagacagcac aagaaaacaac tgaaccctcc actcccactc ccactccag cacacagaca 420
 atcctgaaac cgaaggatc cgagataagg ggctatataa taaaagttga tcaaacagct 480
 aatctcatca cattcataga tgattgtatc aaggagtta acgttcatat taaacagaca 540
 acaacttcgt ctgttgggg cactaaagaa actaatggca ctaccagtgg ttctctgaa 600
 agcaatcccg gttccaccga tttaggttctt attcaagctg aggtggcgaa actattgaaa 660
 aaatttgc当地 caattgc当地 ttttgc当地 aagttcacga acttacacat taataaacct 720
 tttgccatc当地 cacttattaa aaggttgaat gaaataaagg ctgaactatc atctaatagt 780
 ggaacccctc ccaaattacc cgatatatca tggtaagac tatcagaaat tggcagaaa 840
 cttaaccgtt taatcaaatt taataacttctt cggctgatca acaaattcctt tccggagttg 900
 tgcaagttgt ttataaaaaat gccc当地 gactccaaca aatttatggc tttggatgtg 960
 gacataagca acactttgtt aacaggaga gtcagatatt ctgtatggtag atttaccatt 1020
 gtaaggcactg ggtccaaattt tagatacaca ttggcaccaa ctggcctgg tcatgatgg 1080
 tctctcttctt cccaattgcc aatctcaatg attacggatca catggcctca ggagcaggca 1140
 cttacatctt ggtcaatgtca tgtaacgaa tttagcatag taagcactgc aggcaagaca 1200
 acttacacta cacaatctaa gtgttgtca ctttcaagt tatctgc当地 gacgttaagg 1260
 gatttaatg aagcttagatt tgcaattttt aacatgactg atagtctaa taaatctaaa 1320
 gcttggagg tctacaaatc gacactaact actatgaaaat caatatcagt cgaattggaa 1380
 aagatttttgc当地 gcatattaaa atcaactccg aatattactt ttgaatcagt tgtttctaaa 1440
 tacaaattga ctgggtttaa tacagttgtatc actggcaatg ctgtatgtatc caacgagaca 1500
 atgtttgacg atttgtccaa ggcaatttcc tcataacctat actccctcat atctataatt 1560
 ttccggagg atattaaagg tcaaggatca agtgaaggc当地 aacaacaag tgaaggctaa 1620
 caaacaatgt aaggtcaaca aacaatgtgg gatcaggata caagtggagg tcaggatata 1680
 aatgagacaa ttttctcata cctatactcc ctc当地 taattttcc ggaggatatt 1740
 aaaggtaag gtacaatgtc tcaatttttgc gagtataaaat ctc当地 atctctgagc 1800
 aagatcaaat ctctc当地 aaaaataaaaaa agaaggctct ga 1842

<210> 167
 <211> 918
 <212> DNA
 <213> Babesia microti

<400> 167

atgcagcatc accaccatca ccaccatttt attacattct tttaacaag tggaaatgtc 60
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 ctatgtatcg cttaaacga ggctaaaaaa atgtatgcaa aatttctga acagatcagc 180
 gacactatga ttccatctt caaaaaaaaatgtt attgatatac tagaaggc当地 tgagaagaat 240
 ggtggcata aaaattacct tggaaaagaaa gaaattgagc tcaaaaatgtt aattgtggaa 300
 tttaacgcca tttttccaa cattgattta aataatgtt cggtaaaaaa tgaaataatt 360
 aaactgcttta atgatatac cactatcttcc accgatatttta agtcaattgt tgatgaaata 420
 tactataagg ctcttggatc aatttgc当地 gaaaatgtc当地 aaaaatttttgc当地 gtatgaaatt 480
 aagaaaaaaga aagctgaact acttagaaac ctgctgaatg ataataattt accaattatg 540
 ggtatattaa ctgagatata caatatgc当地 ataccaatata tatcaaataa aagcgaattt 600
 aatgatataca agaaagcatt tggaaaagc当地 gaatttgc当地 ctaatgtttt gatatccaaag 660
 atattagaaa ataatcagaa ttgtggactt aattttatgtt acatttttgc当地 tgaatgtt 720
 ggtgc当地 aagaattttaa taaaacttattt gacgttcatga ataacaccat tggggacctt 780
 ggtattgttta ttgacacgccc当地 tattatttca agcataaaaaat catatatttcc cacaatccccc当地 840
 aagattttcttta attcaataat ccctggaccaa atggcactatc tttttactgc attaataatttta 900
 attctaaatttta aatgtatgtt 918

<210> 168
 <211> 696
 <212> DNA
 <213> Babesia microti

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<400> 168
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ggcgccaggta ccgatgccac aagtgtgagt atagcaaatt caataacctac ttccggcaca 120
accgcgcgtc aatcaacaac agctgtaca tcaacaacag ctgctacatc aacaacatct 180
gctacatcaa caacatctgc tacatcaaca acagctacca catcaacaac aactgcccaca 240
tcaacaacaa ctgccacatc aacaacagct accacatcaa caacagctgc cacatcaaca 300
atttctccgt ctctggagac cacacaagat gttgctgtca caaatattgt gaatcttaac 360
ataaacgaaa taggatttgt tgatcaagtt ccagagggtc tttcttcttag ttacgaaaa 420
tctactgtatc gaatctttac caaagttaacc ccagctacag gggtttcaat tggttgtgt 480
atattttggca atcaattaat tccacagtcc atggatgtta tcactaggac cgtttcatac 540
accactaaat atcccttgat tgggtttagg attcaagata agacttcgag ttctacttca 600
accgtttact atgagcaatc tggtttacaa tctagcaaattt tggtttttagg ggatgacc 660
qaatttacat cccaaactaac aagttcttcc tagtga 696

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<210> 169

<211> 786

<212> DNA

<213> Babesia microti

<400> 169

atgcagcatc accaccatca ccacggttct cgtttctctg agatgggtc aagattctct 60
gtgtctccct gggcctggct ggaatgtccc tcctgtcttc caagtccctc gtccagggt 120
accatgtcccc catcccagtc ccctcgatgg tcctcatgcc ctcctcttag ttccggctg 180
ctccccccacc cccgccccat ccccatcaag gactgcccggc tctcatactg ctacccatgc 240
agggtgctca tgcccctgct ccccgccacc tctagtgttt ccgtccctc ccggcccccac 300
tcagcggcac cccatgtcgc agggccggcg tcccgccac gggacactgca gtacagcttg 360
agccgtctcc ccttggcgct gcgactgccc tgctgcccct ctgcggactc cggcggtcg 420
tccgacgtca cctactcgct gctgtgcctg ctctggggcc gcgacgggtcc ggccggcgca 480
tgccaaacct gccccccacg cgtggcccttc gtcccgctgc aggcagggtt gcgagaacgc 540
ggccggcacgc tgctgcaccc gggccggcgcc gcgcgctata ccgtgcgcgt ggccgcgtct 600
aacggtgtct caggccccagc ggccgccccg gaagccaccc acgcgcaggt caccgtgtcc 660
accggaccccg gaggtgaggc cacgcggccc acggaggatcc gtcccccctcc ccaaccgcag 720
ttccctcttat gcattccaag tcattcagga acccacgtga ctacacccca tgccccaggt 780
tgcgtga 786

<210> 170

<211> 561

<212> DNA

<213> Babesia microti

<400> 170

atgcagcatc accaccatca ccacgaggc tatttagatc tcgattgaa ttccaagatt 60
ggtaactta tttcagccat cgaactca actaacctgacca acacggtaaa atcagcgagc 120
gtccacccctc cccaaactaaa agtgttggct ctgaagttt gcaacaagat cgtttatgtc 180
gaggagacag gcaggacatt tgttacattt gatgagaagt tgaattcaat agaaaataatt 240
accttcgaaa atgatggcac tatgacatca aaatttttatt ccagggagtc cctagactca 300
acaacacctaca ttggacatgc ctctacgtac acacttcccc aagtgtttac caggtcattta 360
tgtgttaaaag aggactttag tacgcttgac attacggatc tattgttcaa agagatttagt 420
gctaagaat tggaggatg taggaagaag aatgcatactt gtgttactcc atctgggtgtt 480
acaccttctca atgttccaga ggagtgtgtt attagaacca acttacagat ggttatgaag 540
aagaatgctc gtgcctgata a 561

<210> 171

<211> 897

<212> DNA

<213> Babesia microti

<400> 171

atgcagcatc accaccatca ccacgaggct aatatcagaa caaatcagac agtgaggata 60
 tacttggctt tacaagaatc ctatcac acacatgcac atgtactgtc agtatgtact 120
 gctacatcaa caacatctgc tacatcaaca acagctacca catcaacaac aactgccaca 180
 tcaacaacaa ctgccacatc aacaacagct accacatcaa caacagctgc cacatcaaca 240
 atttctccgt ctctggagac cacacaagat gttgctgtca caaatattgt gaatcttaac 300
 ataaaacgaaa taggatttgt tgatcaagtt ccagagggtc tttcttcttag ttacgtttt 360
 tctactgtatg gaatctttac caaagttacc ccagctacag gggtttcaat tgggtgtta 420
 atatttggca atcaattaat tccacagtcc atggatgtta tcactaggac cgtttcatac 480
 accactaaat atccttgat tgggtttagg attcaagata agacttcgag ttctacttca 540
 accgtttact atgagcaatc tggtttacaa tctagcaaat ttgtttttagg ggatgaccca 600
 gaatttatta ttcctcaaaaa tcgaagtagt acttatacag tcaatgacat aacatataaa 660
 tcatttgata ttcttagtgc cgatgataac gaattttaa aaatatcatt aagtgtatggg 720
 acatgttgtt acaccaataa tccagattcc aaaattaca tcagcgaagt taaggttggg 780
 gagataacaa tbeccaataaa tataacatca caatatacac tgatcaaatt atcatattaat 840
 ggtgaattgg ttgagttgt tactacagga tgggtcggt aacataatat ttgatga 897

<210> 172

<211> 635

<212> PRT

<213> Babesia microti

<400> 172

Met	Gln	His	His	His	His	Asp	Glu	Leu	Asn	Leu	Asp	Gln	Ala
		5					10				15		

Thr	Ile	Arg	Thr	Leu	Val	Ala	Pro	Leu	Glu	Glu	Ile	Lys	Asn	Glu	Leu
			20				25				30				

Lys	Thr	Ile	Ser	Ser	Gln	Lys	Ile	Ala	Asp	Ala	Thr	Val	Thr	Pro	Ser
			35			40					45				

Thr	Pro	Asn	Thr	Asn	Val	Asn	Ile	Lys	Thr	Ile	Ile	Ser	Lys	Ile	Lys
			50			55				60					

Lys	Ile	Leu	Met	Ile	Ser	Glu	Thr	Ile	Ser	Ser	Thr	Ala	Leu	Ala	Arg
			65			70			75				80		

Leu	Ser	Ala	Val	Leu	Ser	Ile	Leu	Gly	Arg	Gly	Thr	Ser	Thr	Asn	Val
			85				90				95				

Ile	Pro	Glu	Arg	Leu	Thr	Ser	Ile	Val	Val	Asp	Leu	Lys	Ser	Ala	Thr
			100				105			110					

Val	Pro	Gln	Glu	Val	Ala	Leu	Lys	Asn	Gly	Val	Tyr	Lys	Leu	Lys	Asp
			115			120				125					

Gln	Phe	Lys	Leu	Thr	His	Lys	Met	Ile	Pro	Val	Phe	Gly	Ser	Val	Gln
			130			135				140					

Leu Gln Ile Pro Glu Lys Ser Thr Val Val Gln Ile Ser Val Val Glu
 145 150 155 160

His Glu Asn Asp Thr Lys Met Ala Ile Ile Thr Leu Asp Asp His Ser
 165 170 175

Lys Leu Thr Leu Glu Arg Val Ile Leu Ser Glu Thr Pro Thr Val Val
 180 185 190

Gly Leu Thr His Thr Thr Gln Asp Pro Leu Asp Val Leu Leu Ser Ile
 195 200 205

Phe Val Lys Met Asp Asn Thr Thr Asp Asp Gly Val Met Glu Gly Tyr
 210 215 220

Leu Asp Leu Asp Leu Asn Ser Lys Ile Gly Asn Phe Ile Ser Ala Ile
 225 230 235 240

Glu Leu Thr Asp Leu Thr Asn Thr Val Lys Ser Ala Ser Val His Pro
 245 250 255

Pro Gln Leu Lys Val Leu Ala Leu Lys Phe Gly Asn Lys Ile Val Asp
 260 265 270

Val Glu Glu Thr Gly Arg Thr Phe Val Thr Phe Asp Glu Lys Leu Asn
 275 280 285

Ser Ile Glu Ile Ile Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys
 290 295 300 320

Phe Tyr Ser Arg Glu Ser Leu Asp Pro Thr Thr Tyr Ile Gly His Ala
 305 310 315 320

Pro Thr Asp Ile Phe Thr Ser Pro Trp Ile Thr Thr His Met His Asn
 325 330 335

Lys Arg Leu Val Asp Phe Glu Val Pro Phe Glu Ala Ile Phe Asp Asp
 340 345 350

Lys Leu Ile Ser Tyr Tyr Thr Gly Thr Asp Val Asn Gly Lys Asn Lys
 355 360 365

Val Pro Ala Glu Leu Thr Lys Ala Ile Cys Gly Lys Glu Asp Val Cys
 370 375 380 385

Glu Leu Asn Ile Thr Gly Leu Leu Leu Lys Asp Ile Ser Ala Lys Lys
 385 390 395 400

Leu Glu Glu Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly
 405 410 415

Gly Thr Pro Ser Asn Val Pro Glu Glu Cys Val Ile Lys Ser Asn Leu
 420 425 430

Gln Thr Val Met Lys Lys Asp Val Thr Thr Thr Leu Lys Ser Asp Asp
 435 440 445
 Val Ser Asn Tyr Ser Val Val Ser Ile His Phe Tyr Ile Asp Asn Val
 450 455 460
 Phe Arg His Asn Thr Ala Phe Gly Arg Ile Lys Ile Gly Asn Leu Asp
 465 470 475 480
 Leu Pro Ala Phe Ser Ile Gly Phe Ile His Ser Ile Phe Val Glu Arg
 485 490 495
 Val Leu Met Gly Asp Lys Ser Leu Ala Ser Val Gly Ile Thr Asn
 500 505 510
 Tyr Gly Pro Ser Gly Asp Tyr Glu Leu Leu Arg Tyr Met Gln Val Glu
 515 520 525
 Glu Gly Lys Asn Tyr Phe Lys Leu Val Gln Gly Pro Glu Ile Thr Ala
 530 535 540
 Asp Tyr Ile Gly Ser Gly Leu Thr Lys His Lys Arg Leu Thr Met Asn
 545 550 555 560
 Gly Ala Ser Thr Gly Ser Ile Gly Phe Glu Thr Asn Tyr Lys Glu Ser
 565 570 575
 Ile Leu Phe Asn Glu Phe Met Arg Pro Thr Asn Lys Ile Val Thr Leu
 580 585 590
 Phe Tyr Thr Asp Ser Glu Thr Val Asn Leu Ile Lys Leu His Ser Leu
 595 600 605
 Glu Asn Val Lys His Gly Val Thr Tyr Ser Ile Tyr Gly Ala Phe Pro
 610 615 620
 Ile Glu Glu Ser Ser Pro Glu Ser Ser Leu Met
 625 630 635

 <210> 173
 <211> 235
 <212> PRT
 <213> Babesia microti

 <400> 173
 Met Gln His His His His His Asp Val Ile Thr Arg Thr Val Ser
 5 10 15
 Tyr Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr
 20 25 30
 Ser Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser
 35 40 45

Ser Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn
 50 55 60

Arg Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp
 65 70 75 80

Ile Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp
 85 90 95

Gly Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser
 100 105 110

Glu Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln
 115 120 125

Tyr Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr
 130 135 140

Thr Thr Gly Cys Phe Gly Glu His Asn Ile Lys Lys Phe Arg Lys Val
 145 150 155 160

Gly Ser Thr Tyr Asn Asp Ile Ser Asn Ala Phe Asp Ile Val Pro Trp
 165 170 175

Ile Pro Ala His Phe Val Val Thr Gln Lys Val Asp Phe Ser Ile Pro
 180 185 190

Phe Asp Leu Phe Glu Ser Asn Tyr His Ser Ile Leu Leu Pro Ala Gly
 195 200 205

Val Asn His Ser Ile His Ile Asn Thr Glu Thr Gly Asn Val Asp Ser
 210 215 220

Val Val Phe Phe Leu Asn Pro Leu Ala Lys His
 225 230 235

<210> 174
 <211> 415
 <212> PRT
 <213> Babesia microti

<400> 174
 Met Gln His His His His His Val Asn Ala Leu Ile Lys Glu Leu
 5 10 15

Asn Ala His Ile Lys Gln Arg Ala Thr Ser Thr Thr Ile Ile Ile
 20 25 30

Glu Thr Asn Ala Lys Asp Val Asp Glu Leu Val Lys Lys Phe Ala Thr
 35 40 45

Ile Ala Ser Phe Asp Asp Lys Phe Lys Asn Val Phe Phe Asp Asn Ser

50	55	60																																																																																																					
Val Ile Asp Glu Ile Val Lys Thr Leu Glu Lys Met Lys Val Glu Ser																																																																																																							
65	70	75	Asp Thr Val Leu Pro Ser Cys Asn Gly Ile Gln Thr Thr Glu Asn Ser			85	90	95	Ser Thr Asp Pro Tyr Thr Val Leu Ser Lys Leu Ile Lys Lys Ile Asn			100	105	110	Asp Ser Ile Ile Arg Pro Met Thr Ser Arg Leu Ile Asn Lys Ser Phe			115	120	125	Pro Glu Leu Cys Lys Leu Phe Ile Lys Met Pro Asp Val Asp Ser Asn			130	135	140	Lys Phe Met Ala Leu Asp Val Asp Ile Ser Asn Thr Leu Val Asn Arg			145	150	155	Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser			165	170	175	Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser			180	185	190	Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln			195	200	205	Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile			210	215	220	Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Gln Ser Lys Leu Leu			225	230	235	240	Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala			245	250	255	Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala			260	265	270	Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val			275	280	285	Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr			290	295	300	Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val			305	310	315	320	Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu			325	330	335	Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe		
Asp Thr Val Leu Pro Ser Cys Asn Gly Ile Gln Thr Thr Glu Asn Ser																																																																																																							
85	90	95																																																																																																					
Ser Thr Asp Pro Tyr Thr Val Leu Ser Lys Leu Ile Lys Lys Ile Asn																																																																																																							
100	105	110																																																																																																					
Asp Ser Ile Ile Arg Pro Met Thr Ser Arg Leu Ile Asn Lys Ser Phe																																																																																																							
115	120	125																																																																																																					
Pro Glu Leu Cys Lys Leu Phe Ile Lys Met Pro Asp Val Asp Ser Asn																																																																																																							
130	135	140																																																																																																					
Lys Phe Met Ala Leu Asp Val Asp Ile Ser Asn Thr Leu Val Asn Arg																																																																																																							
145	150	155	Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser			165	170	175	Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser			180	185	190	Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln			195	200	205	Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile			210	215	220	Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Gln Ser Lys Leu Leu			225	230	235	240	Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala			245	250	255	Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala			260	265	270	Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val			275	280	285	Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr			290	295	300	Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val			305	310	315	320	Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu			325	330	335	Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe																																
Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser																																																																																																							
165	170	175																																																																																																					
Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser																																																																																																							
180	185	190																																																																																																					
Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln																																																																																																							
195	200	205																																																																																																					
Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile																																																																																																							
210	215	220																																																																																																					
Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Gln Ser Lys Leu Leu																																																																																																							
225	230	235	240	Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala			245	250	255	Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala			260	265	270	Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val			275	280	285	Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr			290	295	300	Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val			305	310	315	320	Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu			325	330	335	Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe																																																														
240																																																																																																							
Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala																																																																																																							
245	250	255																																																																																																					
Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala																																																																																																							
260	265	270																																																																																																					
Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val																																																																																																							
275	280	285																																																																																																					
Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr																																																																																																							
290	295	300																																																																																																					
Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val																																																																																																							
305	310	315	320	Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu			325	330	335	Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe																																																																																													
320																																																																																																							
Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu																																																																																																							
325	330	335																																																																																																					
Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe																																																																																																							

340

345

350

Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Glu Gly Gln Gln Thr Ser
 355 360 365

Gly Gly Gln Asp Thr Asn Glu Thr Ile Phe Ser Tyr Leu Tyr Ser Leu
 370 375 380

Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Ala Glu Phe Asp Ile
 385 390 395 400

Lys Leu Ile Asp Thr Val Asp Leu Glu His His His His His His
 405 410 415

<210> 175

<211> 613

<212> PRT

<213> Babesia microti

<400> 175

Met Gln His His His His His Leu Arg Val Lys Asp Ala Ser Ser
 5 10 15

Thr Glu Ala Thr Ile Arg Met Phe Leu Arg Phe Asn Ala Phe Ile Lys
 20 25 30

Phe Leu Asn Glu Glu Lys Ser Arg Gly Asp Lys Ser Ala Leu Asn Asp
 35 40 45

Glu Gly Leu Met Arg Phe Ile Ser Met Thr Ser Gly Phe Ile Asp Asp
 50 55 60

Leu Glu Leu Val Leu Asp Glu Leu Ser Lys His Ser Leu Leu Ile Asn
 65 70 75 80

Asn Glu Gly Ala Lys Ser Met Leu Ser Ser Leu Ile Leu Ser Phe Arg
 85 90 95

Tyr Ile Asn His Ile Arg Asn Leu Ile Asn Gly Ile Tyr Leu Gly Leu
 100 105 110

Asn Asn Pro Ser Ser Ser Ile Gly Glu Thr Ala Gln Glu Thr Thr Glu
 115 120 125

Pro Ser Thr Pro Thr Pro Ser Thr Gln Thr Ile Leu Lys Pro
 130 135 140

Lys Gly Ser Glu Ile Arg Gly Tyr Ile Ile Lys Val Asp Gln Thr Ala
 145 150 155 160

Asn Leu Ile Thr Phe Ile Asp Ala Leu Ile Lys Glu Leu Asn Val His
 165 170 175

Ile Lys Gln Thr Thr Ser Ser Val Val Gly Thr Lys Glu Thr Asn
 180 185 190

Gly Thr Thr Ser Gly Ser Pro Glu Ser Asn Pro Gly Ser Thr Asp Ser
 195 200 205

Gly Ser Ile Gln Ala Glu Val Ala Glu Leu Leu Lys Lys Phe Ala Thr
 210 215 220

Ile Ala Ser Phe Asp Glu Lys Phe Thr Asn Leu His Ile Asn Lys Pro
 225 230 235 240

Phe Ala Asp Ala Leu Ile Lys Arg Leu Asn Glu Ile Lys Ala Glu Leu
 245 250 255

Ser Ser Asn Ser Gly Thr Pro Pro Lys Leu Pro Asp Ile Ser Cys Leu
 260 265 270

Arg Leu Ser Glu Ile Val Gln Lys Leu Asn Arg Leu Ile Lys Phe Asn
 275 280 285

Thr Ser Arg Leu Ile Asn Lys Ser Phe Pro Glu Leu Cys Lys Leu Phe
 290 295 300

Ile Lys Met Pro Asp Val Asp Ser Asn Lys Phe Met Ala Leu Asp Val
 305 310 315 320

Asp Ile Ser Asn Thr Leu Val Asn Arg Arg Val Arg Tyr Ser Asp Gly
 325 330 335

Arg Phe Thr Ile Val Ser Thr Gly Ser Asn Phe Arg Tyr Thr Leu Ala
 340 345 350

Pro Thr Ala Ala Gly His Asp Leu Ser Leu Phe Ser Gln Leu Pro Ile
 355 360 365

Ser Met Ile Thr Val Thr Ser Pro Gln Glu Gln Ala Leu Thr Ser Cys
 370 375 380

Val Ser His Gly Asn Glu Phe Ser Ile Val Ser Thr Ala Gly Lys Thr
 385 390 395 400

Thr Tyr Thr Thr Gln Ser Lys Leu Leu Ser Leu Phe Lys Leu Ser Ala
 405 410 415

Glu Thr Leu Arg Asp Phe Asn Glu Ala Arg Phe Ala Leu Gly Asn Met
 420 425 430

Thr Asp Ser Ala Asn Lys Ser Lys Ala Leu Glu Val Tyr Lys Ser Thr
 435 440 445

Leu Thr Thr Met Lys Ser Ile Ser Val Glu Leu Glu Lys Ile Phe Gly
 450 455 460

Ile Leu Lys Ser Thr Pro Asn Ile Thr Phe Glu Ser Val Val Ser Lys
 465 470 475 480

Tyr Lys Leu Thr Gly Val Asn Thr Val Asp Thr Ala Asn Ala Asp Val
 485 490 495

Ile Asn Glu Thr Met Phe Asp Asp Leu Ser Lys Ala Ile Ser Ser Tyr
 500 505 510

Leu Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln
 515 520 525

Gly Thr Ser Glu Gly Gln Gln Thr Ser Glu Gly Gln Gln Thr Ser Glu
 530 535 540

Gly Gln Gln Thr Ser Gly Asp Gln Asp Thr Ser Gly Gly Gln Asp Thr
 545 550 555 560

Asn Glu Thr Ile Phe Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe
 565 570 575

Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Ala Gln Leu Leu Glu Tyr
 580 585 590

Arg Thr Gln Leu Ala Ser Leu Ser Lys Ile Lys Ser Leu Arg Lys Lys
 595 600 605

Ile Lys Arg Arg Leu
 610

<210> 176

<211> 303

<212> PRT

<213> Babesia microti

<400> 176

Met Gln His His His His His Phe Ile Thr Phe Phe Leu Thr
 5 10 15

Ser Gly Asn Val Phe Ala Gly Asn Gly Asp Val Asn Gln Tyr Ser Ser
 20 25 30

Asp Phe Gly Arg Ala Leu Asn Asp Leu Met Ile Ala Phe Asn Glu Ala
 35 40 45

Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln Ile Thr Asp Thr Met Ile
 50 55 60

His Thr Cys Lys Asn Ser Ile Asp Ile Leu Glu Ala Asp Glu Lys Asn
 65 70 75 80

Gly Gly His Lys Asn Tyr Leu Glu Lys Lys Glu Ile Glu Leu Lys Ser
 85 90 95

Lys Ile Val Glu Phe Asn Ala Ile Phe Ser Asn Ile Asp Leu Asn Asn
 100 105 110
 Ser Thr Val Lys Asn Glu Ile Ile Lys Leu Leu Asn Asp Ile Ser Thr
 115 120 125
 Ile Ser Thr Asp Ile Lys Ser Ile Val Asp Glu Ile Tyr Tyr Lys Ala
 130 135 140
 Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu Asn Phe Glu Tyr Glu Ile
 145 150 155 160
 Lys Lys Lys Ala Glu Leu Leu Arg Asn Leu Leu Asn Asp Asn Ile
 165 170 175
 Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile Tyr Asn Met His Ile Pro
 180 185 190
 Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp Ile Lys Lys Ala Phe Glu
 195 200 205
 Lys His Glu Leu Glu Ala Asn Val Leu Ile Ser Lys Ile Leu Glu Asn
 210 215 220
 Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp Ile Leu Asn Glu Val Asn
 225 230 235 240
 Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile Asp Val Met Asn Asn Thr
 245 250 255
 Ile Gly Asp Leu Gly Ile Val Ile Asp Ser Gly Ile Ile Ser Ser Ile
 260 265 270
 Lys Ser Tyr Ile Ser Thr Ile Ala Lys Ile Ser Asn Ser Ile Ile Pro
 275 280 285
 Gly Gln Met Ala Leu Val Phe Thr Ala Leu Ile Leu Ile Leu Asn
 290 295 300

<210> 177
 <211> 230
 <212> PRT
 <213> Babesia microti

<400> 177
 Met Gln His His His His His Arg Leu Thr Leu Thr Leu Ala Thr
 5 10 15
 Asn Thr Arg Gly Gly Ala Gly Thr Asp Ala Thr Ser Val Ser Ile Ala
 20 25 30

Asn Ser Ile Pro Thr Ser Ala Ala Thr Ala Ala Gln Ser Thr Thr Ala
 35 40 45
 Ala Thr Ser Thr Thr Ala Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr
 50 55 60
 Thr Ser Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Ala Thr
 65 70 75 80
 Ser Thr Thr Thr Ala Thr Ser Thr Ala Thr Thr Ser Thr Thr Ala
 85 90 95
 Ala Thr Ser Thr Ile Ser Pro Ser Leu Glu Thr Thr Gln Asp Val Ala
 100 105 110
 Val Thr Asn Ile Val Asn Leu Asn Ile Asn Glu Ile Gly Phe Val Asp
 115 120 125
 Gln Val Pro Glu Gly Leu Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly
 130 135 140
 Ile Phe Thr Lys Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val
 145 150 155 160
 Ile Phe Gly Asn Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg
 165 170 175
 Thr Val Ser Tyr Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln
 180 185 190
 Asp Lys Thr Ser Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly
 195 200 205
 Leu Gln Ser Ser Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Thr Ser
 210 215 220
 Gln Leu Thr Ser Ser Phe
 225 230

<210> 178
 <211> 185
 <212> PRT
 <213> Babesia microti

<400> 178
 Met Gln His His His His His Glu Gly Tyr Leu Asp Leu Asp Leu
 5 10 15
 Asn Ser Lys Ile Gly Asn Phe Ile Ser Ala Ile Glu Leu Thr Asn Leu
 20 25 30
 Thr Asn Thr Val Lys Ser Ala Ser Val His Pro Pro Gln Leu Lys Val
 35 40 45

Leu Ala Leu Lys Phe Gly Asn Lys Ile Val Asp Val Glu Glu Thr Gly
 50 55 60

Arg Thr Phe Val Thr Phe Asp Glu Lys Leu Asn Ser Ile Glu Ile Ile
 65 70 75 80

Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser Arg Glu
 85 90 95

Ser Leu Asp Ser Thr Thr Tyr Ile Gly His Ala Ser Thr Tyr Thr Leu
 100 105 110

Pro Glu Val Leu Thr Arg Ser Leu Cys Gly Lys Glu Asp Leu Cys Thr
 115 120 125

Leu Asp Ile Thr Asp Leu Leu Lys Glu Ile Ser Ala Lys Lys Leu
 130 135 140

Glu Glu Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly Gly
 145 150 155 160

Thr Pro Ser Asn Val Pro Glu Glu Cys Val Ile Arg Thr Asn Leu Gln
 165 170 175

Met Val Met Lys Lys Asn Ala Arg Ala
 180 185

<210> 179
 <211> 260
 <212> PRT
 <213> Babesia microti

<400> 179
 Met Gln His His His His His Gly Ser Arg Phe Ser Glu Met Gly
 5 10 15

Ser Arg Phe Ser Val Ser Pro Trp Ala Trp Leu Glu Cys Pro Ser Cys
 20 25 30

Leu Pro Ser Pro Leu Phe Gln Val Thr Met Ser Pro Ser Gln Ser Pro
 35 40 45

Arg Trp Ser Ser Cys Pro Pro Leu Ser Ser Trp Leu Leu Pro His Pro
 50 55 60

Arg His Ile Pro Ile Lys Asp Cys Arg Leu Ser Tyr Cys Tyr Pro Cys
 65 70 75 80

Arg Val Leu Met Pro Leu Arg Pro Gly Thr Ser Ser Ala Ser Val Pro
 85 90 95

Ser Arg Pro His Ser Ala Pro Pro His Val Ala Gly Pro Pro Ser Ala

100	105	110
Pro Arg Asp Leu Gln Tyr Ser Leu Ser Arg Ser Pro Leu Ala Leu Arg		
115	120	125
Leu Arg Trp Leu Pro Pro Ala Asp Ser Gly Gly Arg Ser Asp Val Thr		
130	135	140
Tyr Ser Leu Leu Cys Leu Leu Cys Gly Arg Asp Gly Pro Ala Gly Ala		
145	150	155
Cys Gln Pro Cys Gly Pro Arg Val Ala Phe Val Pro Arg Gln Ala Gly		
165	170	175
Leu Arg Glu Arg Ala Ala Thr Leu Leu His Leu Arg Pro Gly Ala Arg		
180	185	190
Tyr Thr Val Arg Val Ala Ala Leu Asn Gly Val Ser Gly Pro Ala Ala		
195	200	205
Ala Ala Glu Ala Thr Tyr Ala Gln Val Thr Val Ser Thr Gly Pro Gly		
210	215	220
Gly Glu Ala Thr Arg Pro Ser Gly Val Arg Pro Pro Pro Gln Pro Gln		
225	230	235
Phe Pro Leu Cys Ile Pro Ser His Ser Gly Thr His Val Thr Thr Pro		
245	250	255
His Ala Pro Gly		
260		
<210> 180		
<211> 297		
<212> PRT		
<213> Babesia microti		
<400> 180		
Met Gln His His His His His Glu Ala Asn Ile Arg Thr Asn Gln		
5	10	15
Thr Val Arg Ile Tyr Leu Ala Leu Gln Glu Ser Tyr Leu His Thr His		
20	25	30
Ala His Val Leu Ser Val Cys Thr Ala Thr Ser Thr Thr Ser Ala Thr		
35	40	45
Ser Thr Thr Ala Thr Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr		
50	55	60
Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr		
65	70	75
80		

Ile Ser Pro Ser Leu Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile
 85 90 95

Val Asn Leu Asn Ile Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu
 100 105 110

Gly Leu Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys
 115 120 125

Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn
 130 135 140

Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr
 145 150 155 160

Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser
 165 170 175

Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser
 180 185 190

Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg
 195 200 205

Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile
 210 215 220

Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly
 225 230 235 240

Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu
 245 250 255

Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr
 260 265 270

Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr
 275 280 285

Thr Gly Cys Phe Gly Glu His Asn Ile
 290 295

<210> 181
<211> 25
<212> PRT
<213> B. microti

<400> 181
Thr Gly Thr Ala Gly Thr Thr Ser Ser Glu Gly Ala Gly Ser Asp
 5 10 15

Lys Ala Gly Thr Gly Thr Ser Gly Thr
 20 25

<210> 182
<211> 25
<212> PRT
<213> B. microti

<400> 182
Glu Ala Gly Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Ala Ala Ser
5 10 15
Gly Lys Ala Gly Thr Gly Thr Ala Gly
20 25

<210> 183
<211> 25
<212> PRT
<213> B. microti

<400> 183
Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala Gly Thr Thr Thr
5 10 15
Ser Ser Gly Thr Glu Ala Gly Gly Thr
20 25

<210> 184
<211> 25
<212> PRT
<213> B. microti

<400> 184
Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala
5 10 15
Thr Ser Thr Leu Thr Gly Asn Gly Gly
20 25

<210> 185
<211> 25
<212> PRT
<213> B. microti

<400> 185
Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala
5 10 15
Thr Ser Asn Gly Thr Glu Ser Gly Gly
20 25

<210> 186

<211> 25
 <212> PRT
 <213> B. microti

<400> 186
 Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys Leu Leu Leu
 5 10 15
 Ser Thr Ile Thr Tyr Ile Val Gly Ala
 20 25

<210> 187
 <211> 26
 <212> PRT
 <213> B. microti

<400> 187
 Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser
 5 10 15
 Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn
 20 25

<210> 188
 <211> 25
 <212> PRT
 <213> B. microti

<400> 188
 Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val
 5 10 15
 Asn Glu Val Thr Cys Ala Asn Thr Lys
 20 25

<210> 189
 <211> 27
 <212> PRT
 <213> B. microti

<400> 189
 Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr Leu
 5 10 15
 Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn
 20 25

<210> 190
 <211> 25
 <212> PRT

<213> B. microti

<400> 190

Gly	Thr	Ser	Gly	Thr	Thr	Thr	Ser	Ser	Gly	Thr	Gly	Ala	Gly	Gly	Ala
5									10						15

Gly	Ser	Gly	Gly	Pro	Ser	Gly	His	Ala
20								25

<210> 191

<211> 25

<212> PRT

<213> B. microti

<400> 191

Asp	Asp	Ile	Lys	Lys	Ala	Phe	Asp	Glu	Cys	Lys	Ser	Asn	Ala	Ile	Ile
5								10							15

Leu	Lys	Lys	Lys	Ile	Leu	Asp	Asn	Asp
20								25

<210> 192

<211> 25

<212> PRT

<213> B. microti

<400> 192

Gly	Asn	Ala	Gly	Ile	Lys	Ser	Tyr	Asp	Thr	Gln	Thr	Thr	Gln	Glu	Ile
5								10							15

Cys	Glu	Glu	Cys	Glu	Glu	Gly	His	Asp
20								25

<210> 193

<211> 25

<212> PRT

<213> B. microti

<400> 193

Thr	Gln	Glu	Ile	Cys	Glu	Glu	Cys	Glu	Gly	His	Asp	Lys	Ile	Asn
5								10						15

Lys	Asn	Lys	Ser	Gly	Asn	Ala	Gly	Ile
20								25

<210> 194

<211> 50

<212> PRT

<213> B. microti

<400> 194

Gly	Lys	Pro	Asn	Thr	Asn	Lys	Ser	Glu	Lys	Ala	Glu	Arg	Lys	Ser	His
5								10						15	

Asp	Thr	Gln	Thr	Thr	Gln	Glu	Ile	Cys	Glu	Glu	Gly	Gly	Thr	Ser	Gly
20							25						30		

Thr	Thr	Thr	Ser	Ser	Gly	Ala	Ala	Ser	Gly	Lys	Ala	Gly	Thr	Gly	Thr
35							40						45		

Ala Gly

50

<210> 195

<211> 26

<212> PRT

<213> B. microti

<400> 195

Gly	Lys	Pro	Asn	Thr	Asn	Lys	Ser	Glu	Lys	Ala	Glu	Arg	Lys	Ser	His
5								10						15	

Asp	Thr	Gln	Thr	Thr	Gln	Glu	Ile	Cys	Glu						
20							25								

<210> 196

<211> 25

<212> PRT

<213> B. microti

<400> 196

Leu	Asp	Asn	Leu	Leu	Arg	Leu	Thr	Ala	Gln	Glu	Ile	Tyr	Glu	Glu	Arg
5								10					15		

Lys	Glu	Gly	His	Gly	Lys	Pro	Asn	Thr							
20							25								

<210> 197

<211> 25

<212> PRT

<213> B. microti

<400> 197

Ser	Glu	Lys	Thr	Glu	Arg	Lys	Ser	His	Asp	Thr	Gln	Thr	Pro	Gln	Glu
5								10					15		

Ile	Tyr	Glu	Glu	Leu	Asp	Asn	Leu	Leu							
20							25								

<210> 198

<211> 25
<212> PRT
<213> B. microti

<400> 198
Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His
5 10 15
Glu Glu Glu His Gly Asn Leu Asn Lys
20 25

<210> 199
<211> 26
<212> PRT
<213> B. microti

<400> 199
Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
5 10 15
Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp
20 25

<210> 200
<211> 25
<212> PRT
<213> B. microti

<400> 200
Thr Ala Gln Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu
5 10 15
Asn Thr Asn Lys Ser Glu Lys Thr Glu
20 25

<210> 201
<211> 25
<212> PRT
<213> B. microti

<400> 201
Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr
5 10 15
Thr Gln Glu Ile Cys Glu Glu Cys Glu
20 25

<210> 202
<211> 25
<212> PRT

<213> B. microti

<400> 202

Glu	Glu	Gly	His	Asp	Lys	Ile	Asn	Lys	Asn	Ser	Gly	Asn	Ala	Gly
						5			10				15	
Ile	Lys	Ser	Tyr	Asp	Thr	Gln	Thr	Pro						
						20			25					

<210> 203

<211> 25

<212> PRT

<213> B. microti

<400> 203

Asp	Thr	Gln	Thr	Pro	Gln	Glu	Thr	Ser	Asp	Ala	His	Glu	Gly	His
									5			10		15
Asp	Lys	Ile	Asn	Thr	Asn	Lys	Ser	Glu						
						20			25					

<210> 204

<211> 1359

<212> DNA

<213> Babesia microti

<400> 204

taaaaatatga caaaagattt aatgaacata ctgacatgaa tggattcat tattattata 60
 ttgatggtag tttacttgcg agtggcgaag ttacatctaa ttttcgttat atttctaaag 120
 aatatgaata tgagcataca gaattagcaa aagagcattg caagaaagaa aaatgtgtaa 180
 atgtggataa cattgaggat aataatttgaa aaatatatgc gaaacagttt aaatctgttag 240
 ttactactcc agctgatgtta gcgggtgtgt cagatggatt ttttatacgt gccaaaatc 300
 ttggtgctgt gggcagtgtta aatgaacaac ctaatactgt tggtatgagt tttagaacaat 360
 tcatacaagaa cgagctttat tcttttagta atgaaaattta tcatacaata tctagtcaaa 420
 tcagaattt tttcttaata atgatgtctg atgcaattgt taaacatgat aactatattt 480
 taaaaaaaaaga aggtgaaggc tggtaacaaa tctacaatta tgaggaattt atagaaaaagt 540
 tgaggggtgc tagaagttag gggataataa tgtttcagga agctctgata aggtttagga 600
 atgcttagtag tgaagaaatg gtaatgctg caagttatct atccggccgcc cttttcagat 660
 ataaggaattt tgatgatgaa ttattcaaaa aggccaaacga taattttgga cgcgatgatg 720
 gatatgattt tgattatata aatacaaaga aagagtttgt tataacttgcc agtgtgttgg 780
 atggtttggaa tttataataatg gaacgtttga tcgaaaattt cagtgtatgtc aataatacag 840
 atgatattaa gaaggcattt gacgaatgca aatctaattgc tattatattt aagaaaaaaga 900
 tacttgacaa tggatggat tataagat tattttggaa aatggtaat gaagtaacat 960
 gtgcaaacac aaaatttggaa gccctaaatg atttgcataat ttccgactgt gagaaaaaaag 1020
 gtatataagat aaacagagat gtgattcaa gctacaaatt gcttctttcc acaatcacct 1080
 atattgttgg agctggagtt gaagctgtaa ctgttagtgt gtctgctaca tctaatggaa 1140
 ctgggtgggg tggagctgtc agtggaaactg gaactagtgg aactactacg tctagtgttgg 1200
 gtgctggtag tggtaaagct ggaactggaa cttagtggaa tactacgtct agtggaaactg 1260
 gtgctggtagt ggtggaccta gtggacatgc ttctaatgca aaaattccctg 1320
 gaataatgac actaactcta tttgcattat taacattta 1359

<210> 205

<211> 25
<212> DNA
<213> Babesia microti

<400> 205
aaatgttaat aatgcaaata gagtt

25

<210> 206
<211> 26
<212> DNA
<213> Babesia microti

<400> 206
caatgaataa tgataacaaat aaatgg

26

<210> 207
<211> 54
<212> PRT
<213> Babesia microti

<400> 207
Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala
5 10 15
Thr Ser Asn Gly Thr Gly Gly Gly Ala Ala Ser Gly Thr Gly Thr
20 25 30
Ser Gly Thr Thr Ser Ser Glu Gly Ala Gly Ser Gly Lys Ala Gly
35 40 . 45
Thr Gly Thr Ser Gly Thr
50

<210> 208
<211> 45
<212> PRT
<213> Babesia microti

<400> 208
Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala
5 10 15
Thr Ser Asn Gly Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr
20 25 30
Ser Val Ser Ala Thr Ser Thr Leu Thr Gly Asn Gly Gly
35 40 . 45

<210> 209
<211> 452
<212> PRT
<213> Babesia microti

<400> 209
 Lys Tyr Asp Lys Arg Phe Asn Glu His Thr Asp Met Asn Gly Ile His
 5 10 15

Tyr Tyr Tyr Ile Asp Gly Ser Leu Leu Ala Ser Gly Glu Val Thr Ser
 20 25 30

Asn Phe Arg Tyr Ile Ser Lys Glu Tyr Glu Tyr His Thr Glu Leu
 35 40 45

Ala Lys Glu His Cys Lys Lys Glu Lys Cys Val Asn Val Asp Asn Ile
 50 55 60

Glu Asp Asn Asn Leu Lys Ile Tyr Ala Lys Gln Phe Lys Ser Val Val
 65 70 80

Thr Thr Pro Ala Asp Val Ala Gly Val Ser Asp Gly Phe Phe Ile Arg
 85 90 95

Gly Gln Asn Leu Gly Ala Val Gly Ser Val Asn Glu Gln Pro Asn Thr
 100 105 110

Val Gly Met Ser Leu Glu Gln Phe Ile Lys Asn Glu Leu Tyr Ser Phe
 115 120 125

Ser Asn Glu Ile Tyr His Thr Ile Ser Ser Gln Ile Ser Asn Ser Phe
 130 135 140

Leu Ile Met Met Ser Asp Ala Ile Val Lys His Asp Asn Tyr Ile Leu
 145 150 160

Lys Lys Glu Gly Glu Gly Cys Glu Gln Ile Tyr Asn Tyr Glu Glu Phe
 165 170 175

Ile Glu Lys Leu Arg Gly Ala Arg Ser Glu Gly Asn Asn Met Phe Gln
 180 185 190

Glu Ala Leu Ile Arg Phe Arg Asn Ala Ser Ser Glu Glu Met Val Asn
 195 200 205

Ala Ala Ser Tyr Leu Ser Ala Ala Leu Phe Arg Tyr Lys Glu Phe Asp
 210 215 220

Asp Glu Leu Phe Lys Lys Ala Asn Asp Asn Phe Gly Arg Asp Asp Gly
 225 230 235 240

Tyr Asp Phe Asp Tyr Ile Asn Thr Lys Lys Glu Leu Val Ile Leu Ala
 245 250 255

Ser Val Leu Asp Gly Leu Asp Leu Ile Met Glu Arg Leu Ile Glu Asn
 260 265 270

Phe Ser Asp Val Asn Asn Thr Asp Asp Ile Lys Lys Ala Phe Asp Glu

275	280	285
Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys Ile Leu Asp Asn Asp		
290	295	300
Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val Asn Glu Val Thr Cys		
305	310	315
320		
Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser Asp Cys		
325	330	335
Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys		
340	345	350
Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala Gly Val Glu Ala		
355	360	365
Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly Thr Gly Gly Gly		
370	375	380
Ala Ala Ser Gly Thr Gly Thr Ser Gly Thr Thr Ser Ser Glu Gly		
385	390	395
400		
Ala Gly Ser Gly Lys Ala Gly Thr Gly Thr Ser Gly Thr Thr Ser		
405	410	415
Ser Gly Thr Gly Ala Gly Ala Gly Ser Gly Gly Pro Ser Gly His		
420	425	430
Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr Leu Thr Leu Phe Ala		
435	440	445
Leu Leu Thr Phe		
450		

<210> 210
<211> 2079
<212> DNA
<213> Babesia microti

<400> 210
aatccaacat ctagcctagt tagtatatat aggttaatat cacattatacg attatctttg 60
gatgattgggt tattatataa catgtcgctg aatgacgatt attttgcgtg ataataataac 120
taccgggtat tctgaggacc tactttaaag agaataatta acatatctac cagaatcagt 180
tccaaatttat gtattttaaa gctaattact actcgaaaaac tacgggtaaaa atggaaaaac 240
aagtggaaagc tggatgtcggt gaaaaagtcaac tacattttat gtggggcaaat ttaataattc 300
taaataactat gtttttgatg ttaaaaagcg aaaaacacac ttaatgcac atttttaacat 360
catctgtata atatatataat cagcgttggaa atcatatggc aaaggtaata aagcgttaca 420
ttttgagcga ataaaggcac atatgcaaac gtatgaaagcc ttgtatattt gtggaaattat 480
attatgcttag taatttgtga ttaataatgg caatatttat atacaaaatat tcgagcgttc 540
tattatatgc atgcacataa ttaatcacaa actctcatat catggggccgg tttcgccccat 600
cataaacatt actgttagca ctctggtaga ttagcatggt gaatctctcg atacctggc 660
tactgttgct ttccgcataat tccttaaatt ctgcaagtgc gggggatgta tatgagatat 720

Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His
 130 135 140

Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln
 145 150 155 160

Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn
 165 170 175

Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln
 180 185 190

Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu
 195 200 205

Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys
 210 215 220

Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu
 225 230 235 240

Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 245 250 255

Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu
 260 265 270

Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 275 280 285

Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu
 290 295 300

Thr Ser Asp Ala His Glu Glu Gly His Asp Lys Ile Asn Thr Asn Lys
 305 310 315 320

Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu
 325 330 335

Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 340 345 350

Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu
 355 360 365

Thr Ser Asp Ala His Glu Glu Gly His Asn Leu Asn Lys Asn Lys
 370 375 380

Ser Gly Lys Ala Gly Ile Lys Ser His Asn Thr Gln Thr Pro Leu Lys
 385 390 395 400

Lys Lys Asp Phe Cys Lys Glu Gly Cys His Gly Cys Asn Asn Lys Pro
 405 410 415

Glu Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp Asp Asp Gly Gly Cys
 420 425 430

Glu Cys Gly Met Thr Asn His Phe Val Phe Asp Tyr Lys Thr Thr Leu
 435 440 445

Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr His Tyr Tyr Ile Ala
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Met Ala Ala Ile Phe Thr Ile Ser Leu Phe Pro Cys Met Phe Lys Ala
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Phe

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Pro Asp Ile Glu

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Cys Gly Met Thr
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